APPENDIX A

Appendix A

Attachment Title	Relevant Selection Criterion	Page #
Iowa Core Curriculum Overview	(A)(1)(i)	Appendix A, page 3
Iowa Core Curriculum Implementation Planning	(A)(1)(i)	Appendix A, page 23
284.7—8 Iowa Teacher Career Path.	(A)(1)(i)	Appendix A, page 40
AEA Accreditation Standards with Iowa Administrative Code	(A)(1)(i)	Appendix A, page 42
2006 Legislative Update to the 2001 Student Achievement and Teacher Quality Act	(A)(1)(i)	Appendix A, page 43
Executive Order #48	(A)(1)(i)	Appendix A, page 47
Iowa Statewide Initiatives	(A)(1)(i)	Appendix A, page 49
Iowa's Race to the Top Participating Local Education Agencies (LEA) Memorandum of Understanding	(A)(1)(ii)	Appendix A, page 67
Participating LEAs (Detailed Table for (A)(1))	(A)(1)(ii)	Appendix A, page 78
Implementation Research: A Synthesis of the Literature	(A)(2)(i)	Appendix A, page 86
IAC** 281—12: General Accreditation Standards (Summary)	(A)(2)(i)	Appendix A, page 132
IAC 281—79: Standards for Administrator and Practitioner Preparation Programs.	(A)(2)(i)	Appendix A, page 136
IAC 281—72: Accreditation of Area Education Agencies	(A)(2)(i)(ii)	Appendix A, page 149
RTTT Letters of Support	(A)(2)(ii)	Appendix A, page 156
Iowa NAEP Results 1990 to 2007: The Rest of the Story	(A)(3)(i)	Appendix A, page 195
Selected NAEP Achievement Charts for Iowa, 1990-2009	(A)(3)(i)	Appendix A, page 226
Learning Supports in Iowa	(A)(3)(ii)	Appendix A, page 233

**IAC refers to the Iowa Administrative Code.

Iowa CORE Curriculum

Overview

May 21, 2009

State Board of Education

State of Iowa
Department of Education
Grimes State Office Building
400 E 14th St
Des Moines IA 50319-0146

State Board of Education

Rosie Hussey, President, Clear Lake
Charles C. Edwards, Jr., Vice President, Des Moines
Sister Jude Fitzpatrick, West Des Moines
Brian Gentry, Des Moines
Joan Jaimes, Marshalltown
Wayne Kobberdahl, Council Bluffs
Valorie J. Kruse, Sioux City
Max Phillips, Woodward
LaMetta Wynn, Clinton
Kameron Dodge, (Student Member), Cambridge

Administration

Judy A. Jeffrey, Director and Executive Officer of the State Board of Education
Gail M. Sullivan, Chief of Staff

Division of PK-12 Education

Kevin Fangman, Administrator

Bureau of Teaching and Learning Services

Jim Reese, Chief

It is the policy of the Iowa Department of Education not to discriminate on the basis of race, creed, color, sex, sexual orientation, gender identify, national origin, gender, disability, religion, age, political party affiliation, or actual or potential parental, family or marital status in its programs, activities, or employment practices as required by the *Iowa Code* sections 216.9 and 256.10(2), Titles VI and VII of the Civil Rights Act of 1964 (42 U.S.C. § 2000d and 2000e), the Equal Pay Act of 1973 (29 U.S.C. § 206, et seq.), Title IX (Educational Amendments, 20 U.S.C. §§ 1681 – 1688) Section 504 (Rehabilitation Act of 1973, 29 U.S.C. § 794), and the Americans with Disabilities Act (42 U.S.C. § 12101, et seq.).

If you have questions or grievances related to compliance with this policy by the Iowa Department of Education, please contact the legal counsel for the Iowa Department of Education, Grimes State Office Building, 400 E 14th St, Des Moines IA 50319-0146, telephone number 515/281-5295, or the Director of the Office for Civil Rights, U.S. Department of Education, 111 N. Canal Street, Suite 1053, Chicago, IL 60606-7204.

Table of Contents

- What vision does the Iowa Core Curriculum advance? 1
- What policies created the Iowa Core Curriculum? 1
- What is the Iowa Core Curriculum? 2
- What does the Iowa Core Curriculum look like? 4
- What are the benefits of the Iowa Core Curriculum to students? 6
- What are the benefits of the Iowa Core Curriculum to educators? 7
- What are the benefits to the state? 8
- How do we know the Iowa Core Curriculum is credible? 8
- What assumptions guide this work? 10
- Who is leading the work to develop and build statewide capacity to implement the Iowa Core Curriculum? 13
- What should be considered in the design for successful implementation? 14
- References 16

Iowa Core Curriculum Overview

- **Each and every K-12 student will learn the essential concepts and skill sets identified in the Iowa Core Curriculum for life in the 21st century.**
- **Each K-12 educator will embed the essential concepts and skill sets in rigorous and relevant instruction informed by ongoing formative assessment.**
- **Each and every educational leader will ensure an aligned system of curriculum, instruction, and assessment, focused on the Core Curriculum essential concepts and skill sets**
- **The Iowa Department of Education, AEAs, LEAs, and collaborative partners will work together to provide the systems of supports to establish and sustain structures for the essential concepts and skill sets, instruction, and assessment.**

What vision does the Iowa Core Curriculum advance?

The vision for the Iowa Core Curriculum is to ensure the success of each and every student by providing a world-class curriculum. The Core Curriculum is designed to improve achievement of all students, preparing them for the world of work and lifelong learning. It identifies the essential content and instruction that all students must experience.

The technical assistance efforts supported by the Core Curriculum Department of Education Team, the Advisory Team and the Core Curriculum Area Education Agency (AEA) Network are designed to provide Iowa educators with the tools to assure that essential subject matter is being taught and essential knowledge and skills are being learned.

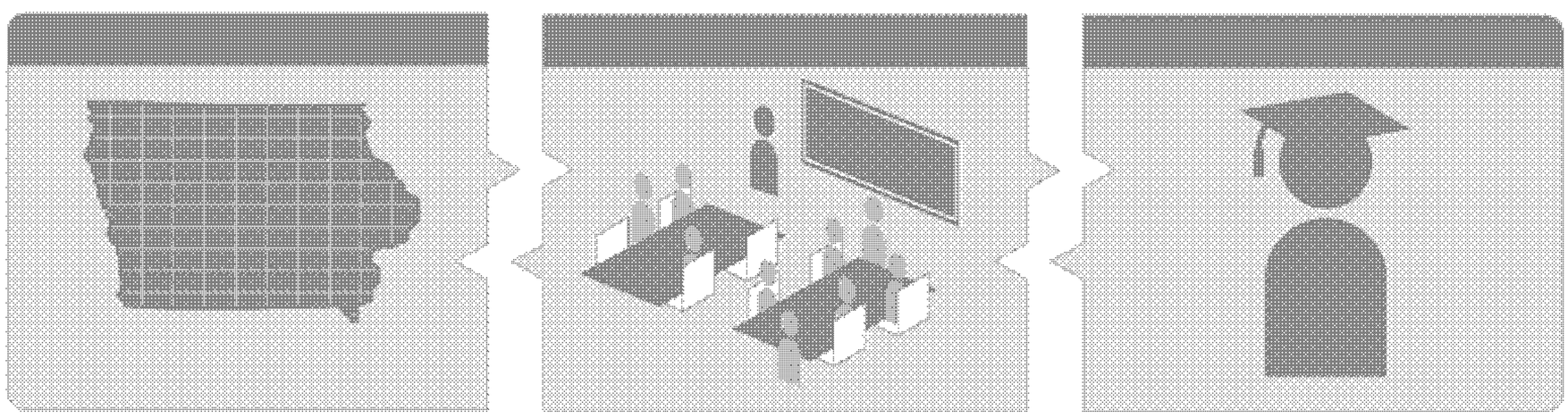
School districts that implement the Core Curriculum with integrity increase the likelihood that all students become life-long learners, productive adults, and engaged citizens. The Department improvement efforts are designed to yield positive results by enabling schools to prepare students to graduate with the 21st century skills and competencies needed to be successful in post-high school endeavors and the world of work.

What policies created the Iowa Core Curriculum?

Senate File 245 (May 2005) and Senate File 588 (May 2007) established the voluntary Model Core Curriculum in K-12 literacy, mathematics, science, social studies, and 21st century skills. Governor Chet Culver proposed that the Core Curriculum be fully implemented by all Iowa schools – public and accredited nonpublic. The Governor signed Senate File 2216 into law May 1, 2008, which requires the full implementation of the Core Curriculum – in high schools by July 1, 2012 and K-8 by 2014-15. Implementation plans are required for high schools by July 1, 2010 and by K-8 schools by July 1, 2012.

What is the Iowa Core Curriculum?

The Core Curriculum provides the details for teachers to make sure students reach Iowa's Core Content Standards and Benchmarks. It assists teachers in knowing how to integrate essential concepts and skills into student learning opportunities. The Core Curriculum is about teaching and learning; it provides examples of powerful instruction clearly tied to classroom assessments. It provides a comprehensive picture of effective curriculum that addresses pedagogy, content knowledge, and assessment.



STANDARDS AND BENCHMARKS

CORE

STUDENT ACHIEVEMENT

The purpose of the Core Curriculum is to raise student expectations and change teaching behaviors to impact student achievement. The Core Curriculum provides the processes and establishes the urgency to set higher expectations and infuse more challenging and meaningful content into classroom instruction.

Standards in Iowa Education

The Iowa Core Curriculum integrates the Iowa Core Content Standards and Benchmarks, the National Assessment of Educational Progress frameworks, and national curriculum documents in literacy, mathematics, science, social studies, and 21st century skills.

In Iowa, we have many standards:

- **Accreditation Standards – These standards describe minimum requirements that must be met for an Iowa school district to be accredited. A nonpublic school must meet general accreditation standards if it wishes to be designated as accredited for operation in Iowa.**
- **Program Standards – These standards describe the instruction that all public and accredited nonpublic schools must offer students prekindergarten through grade twelve.**
- **Teaching and Leadership Standards – These standards describe the performance Iowa expects of its educators.**
- **Core Content Standards – Broad statements that identify the knowledge and skills that students should acquire, in reading, mathematics, and science.**
- **Performance standards – Levels of performance are described as high – distinguished and accomplished, intermediate – skilled and moderate, low – marginal and weak.**

The Core Content Standards are supported by a system that is comprised of several components: assessments, teacher professional development, curriculum, grade level expectations, and benchmarks.

A benchmark is a learning target for a grade level span. Grade level indicators provide further detail and show what learning targets look like for each grade K-8.

There is an evidence base supporting the implementation of the Core Curriculum. A significant body of work by multiple theorists and researchers asserts that the content of instruction plays a primary role in determining gains in student achievement (Garmoran, Porter, Smithson, & White, 1997: McKnight et al, 1987; Rowan, 1998; Schmidt, 1983a, 1983b; Sebring, 1987; Walberg & Shanahan, 1983). The Core Curriculum helps to focus the curriculum on higher order thinking skills and increase the cognitive demands placed on students. Challenging instruction yields positive student outcomes.

The Second International Mathematics Study (SIMS) and the Third International Mathematics and Science Study (TIMMS), and other international studies suggest that providing students with opportunities to learn using a focused curriculum that emphasizes depth of knowledge and skills and encourages thinking and cognitively complex applications leads to improved student performance (Niebling, Roach, Rahn-Blakeslee, 2008).

What does the Iowa Core Curriculum look like?

The Core Curriculum is not just a document distributed to school districts. Ongoing and sustained professional development and leadership will be required to guide and enhance curriculum content, classroom instruction, and classroom assessment. School district personnel will analyze both the content and instruction of their current curriculum, find the gaps, and as needed, restructure their current instructional program to incorporate the Core Curriculum. The Core Curriculum is not course-based, but rather is a student-based approach that supports high expectations for all students.

The Department is committed to providing leadership, policy, professional development, and technical assistance to assist Iowa's schools in enhancing learning for all students in each content area. The Department advocates and supports the implementation of a consistent approach to instructional improvement that integrates multiple components

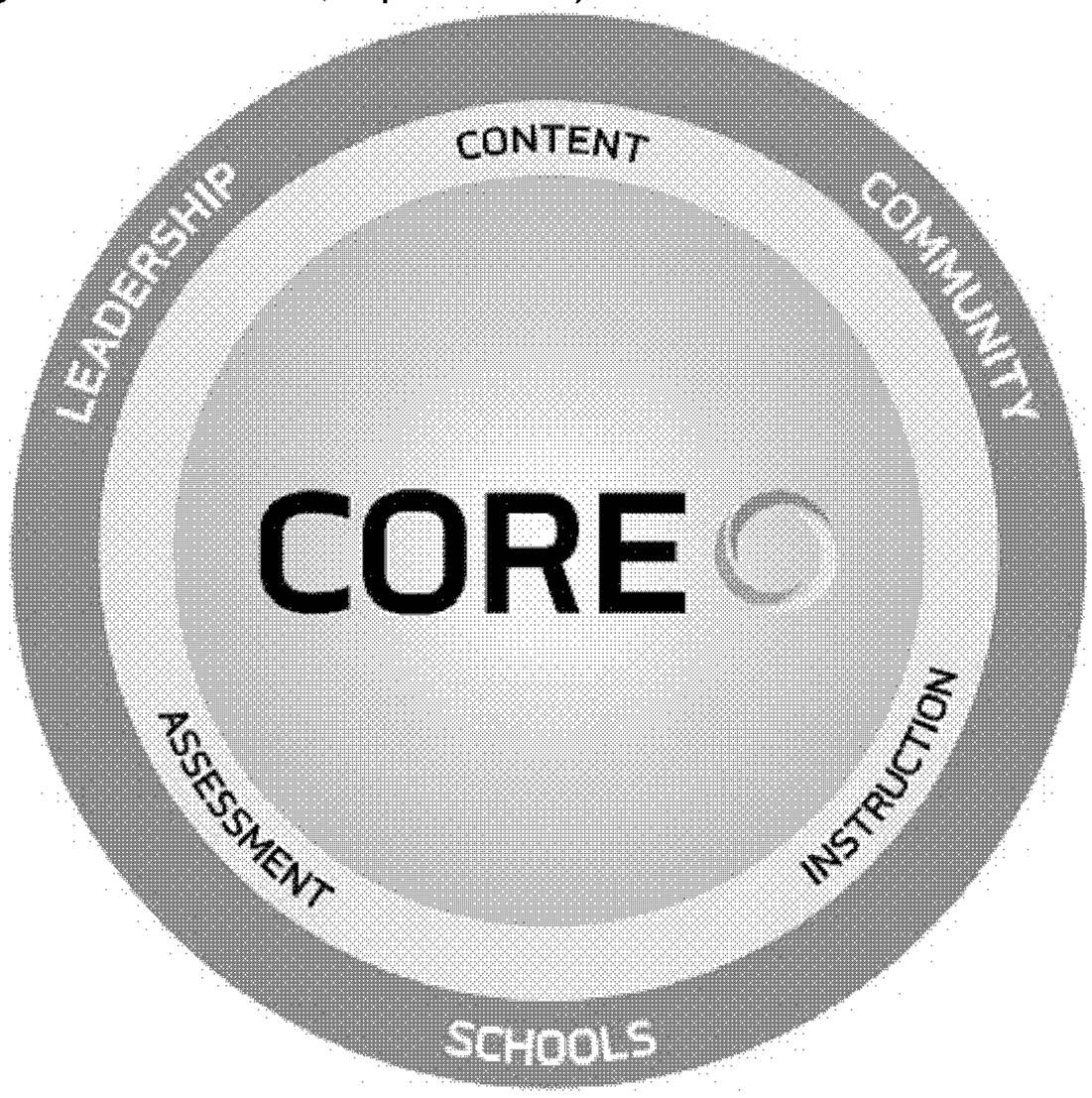
The Iowa Core Curriculum focuses on accelerating student achievement. Iowa has a system of Iowa Core Standards, Benchmarks, and grade level indicators that contributes to our tradition of high student performance. The Core Curriculum provides direction about essential content, authentic instruction, and authentic assessment for the core content areas of literacy, mathematics, science and social studies. An additional emphasis on 21st century skills addresses the content students need to flourish in a world marked by a changing workforce and rising global competition. The Core Curriculum provides all schools with the three essential characteristics of a quality instructional program: 1) a guaranteed and viable curriculum, 2) data-driven processes, and 3) practices and methodologies that are evidence-based.

The Department supports a range of instructional initiatives providing school districts and AEAs with replicable approaches to implement authentic instruction and assessment in each core content area. Literacy, mathematics, and science initiatives are currently being implemented across the state, as is professional development in authentic instruction that is not content area-specific. The Department has plans to include initiatives supportive of social studies and 21st century skills.

Quality education in Iowa is supported by the successful implementation of the Core Curriculum. This requires the inclusion of system level supports: Learning Supports, the Instructional Decision Making process, and the Iowa Professional Development Model. To accomplish an improved educational system and student learning through curriculum reform, school leaders at the state, regional and local level must maintain an unrelenting focus on improving not just the practices used by teachers to deliver instruction to all students, but also the organizational structures and supports.

To effectively incorporate the Iowa Core Curriculum into practice, Iowa school leaders must support the implementation and sustainability of instruction. Leadership needs to be focused on learning, and leaders need to ask hard questions about teaching practices and student learning and consistently know and model the knowledge and

skills needed to do the work (Elmore, January 2002; May, 2002; November, 2003). As schools engage in the curriculum and instruction framed by the Iowa Core Curriculum, distributed leadership is needed alongside of quality professional development to ensure success. Leaders must make sustainability of instruction a priority by committing to and protecting the conceptual learning of students, distributing leadership and responsibility to others, and actively engaging in classroom environments (Hargreaves & Fink, April 2004).



- Students learn more and achievement improves when *Content* is challenging, relevant, and promotes engaging learning experiences.
- The quality of *Instruction* and learning improves when teachers know what to teach – The Iowa Core Content Standards and Benchmarks and the Core Curriculum provide the direction and details teachers need to know to plan and deliver effective instruction.
- Instruction is more responsive to student needs when authentic, valid and reliable *Assessments* are used to measure progress and motivate students to read their learning goals.
- The goals of the Core Curriculum will be accomplished when *Schools* and supporting agencies function as an integrated system and provide a coordinated approach, consistent communication, and differentiated delivery.
- Implementation of the Core Curriculum will be successful when committed *Leadership* actions are focused and committed to providing the expertise, guidance, and resources needed to support teaching and learning.
- Making systematic changes and providing ongoing supports to improve instruction, content, and assessment will be successful when the *Community* is fully informed and actively engaged in the process. Effective implementation occurs when multiple partners including business and industry and communities are interdependent.

What are the benefits of the Iowa Core Curriculum to students?

The Core Curriculum:

- Ensures that students will grasp big ideas through a focus on essential topics.
- Moves students beyond superficial knowledge to deep conceptual and procedural knowledge through learning for understanding, problem solving, and inquiry.
- Provides students opportunities to learn rigorous, robust content through the effective pedagogy of the Core Curriculum. Students will leave school equipped to succeed regardless of their postsecondary plans.
- Enhances student engagement by involving students in interesting, relevant learning experiences that are motivating and lead to positive outcomes and less negative behavior.

> ***For most students, the usual work demanded in school is rarely considered meaningful, or worthwhile. Learning tasks call for specific memorized information, retrieval of given information or application of routine computational procedures, but rarely do they call for higher-level thinking, interpretation, or in-depth conceptual understanding.***
>
> ***Newmann, King, and Carmichael, 2007***

- Facilitates reduction in fragmentation and redundancy that sometimes occurs in school curricula thus creating more effective use of instructional time.
- Promotes the use of formative assessments that are based on authentic content taught in a meaningful way and engages students more directly in monitoring their progress and growth, thus providing a motivator to improve.
- Promotes clear communication between parents, teachers, and students about what a student is to know and be able to do as he or she moves through the K-12 educational system.
- Promotes student learning through the development of conceptual understanding and application of knowledge. Examples:

Math:	Shifts from memorizing and practicing facts and procedures to understanding and applying concepts, practices, and facts.
Literacy:	Shifts from a primary focus on reading and writing in English/Language Arts classes to the integration and practical application of all five literacy skills – reading, writing, speaking, viewing, and listening – across all content domains.
Science:	Shifts from lecture, an over-emphasis on textbook readings and “cookbook” labs to learning through actively investigating, designing experiments, questioning, exploring, and defending conclusions.

Social Studies:	Shifts from lecture and recitation of discrete pieces of information to the acquisition of knowledge and skills associated with the economic, political, civic, and social forces that are relevant to the world in which students live.
21st Century Skills	Shifts from a traditional system that may not include the incorporation of these skills into curriculum for all, to one that requires that all students leave school prepared to succeed in the complex new, 21st century. Essential concepts and skill sets include employability skills, financial literacy, health literacy, and technology literacy.

What are the benefits of the Core Curriculum to educators?

- Teachers who deliver instruction focused on the Core Curriculum will have confidence that their content and pedagogy are research-based or evidence-based.
- When the content is focused, quality professional development can provide important professional growth for teachers to improve their instructional practices. Teachers engaged in quality professional learning are more likely to be productive and positive learners and improve the learning culture of the school (Iowa Teaching Standards #2 and #7).
- As school staffs analyze local curriculum and instruction to identify opportunities for improvement, they are likely to discover that they spend too much instructional time teaching content that is not essential and not enough time focusing on the critical content. This process will help schools determine what to do more of and what to eliminate or decrease.
- As school staffs focus on improving instruction, they may discover instructional practices that are commonly used but ineffective and decide to replace those practices with more effective, research supported ones.
- The Core Curriculum provides consistency among Iowa's schools and districts, which will aid teacher preparation programs at universities and colleges to better prepare teacher candidates to successfully enter Iowa's teacher workforce.
- Teachers who are focused on the Core Curriculum are less distracted by fads and superficial projects that are unlikely to yield results.
- When teachers design formative assessment practices based on authentic content, data will be useful for shaping future instruction.
- The Core Curriculum provides school administrators further opportunities to support balanced leadership by giving them tools to actively help teachers with issues regarding curriculum, instruction, and assessment (Standard 2, Iowa School Leaders Standards and Balanced Leadership Responsibilities).

Through the process of improving lessons and sharing with colleagues the knowledge they acquire, something remarkable happens to teachers: they begin viewing themselves as true professionals. They see themselves contributing to the knowledge base that defines the profession. And they see this as an integral part of what it means to be a teacher.

Stigler, J. W, & Hiebert, J. (1999).

What are the benefits to the state?

- The Core Curriculum identifies Iowa as a state that values high expectations for all students and all educators.
- Common beliefs about important content and robust instruction create continuity across the state for educators and students.
- The Core Curriculum galvanizes educators to take action to improve teaching and learning by encouraging educators and community members to strive toward a common goal with the same priorities.
- The Core Curriculum facilitates coherence. The orchestration of all the components fit together in a way that makes sense to stakeholders.
- The Core Curriculum extends the Iowa Core Content Standards and Benchmarks to identify priorities to improve the educational system in all of Iowa's schools.
- The Core Curriculum maximizes the effectiveness of the existing statewide assessment system, which was developed to comply with NCLB. Rather than spending precious resources on developing a new set of standards and statewide test for accountability, funds will expand professional development, technical assistance and support for improved achievement.
- The Core Curriculum, if implemented with fidelity, improves test scores and increases the number of graduates who are poised to pursue post-secondary opportunities.
- The Core Curriculum, when implemented with fidelity, has the capacity to positively impact Iowa's economic base by providing more skilled employees for the workplace and students better prepared for post-secondary education.
- The Core Curriculum's emphasis on authentic learning provides Iowa with citizens better prepared to address the complexities of life in the 21st century.

How do we know the Iowa Core Curriculum is credible?

Multiple sources have been consulted in the development of essential concepts and skill sets of the Core Curriculum:

- Research and best practice literature for each content area has been reviewed.

- National Assessment of Educational Progress (NAEP) Frameworks provided a tool to monitor that essential content in each discipline is covered.
- Student performance data from ACT, Iowa Testing Services, and NAEP were used to identify the strengths and areas of needed improvement of Iowa's students.
- Standards from ACT, College Board, American Diploma Project, and others were utilized in an alignment study.
- National curriculum documents in literacy, mathematics, science, social studies, and 21st century skills, especially civic literacy, health literacy, financial literacy, technology literacy, and employability skills were integrated into the development.
- Other states' and international standards were consulted.

The Department has also accessed nationally recognized researchers and program development experts in developing the approach to implementation of effective instructional improvements:

- Drs. Fred Newmann, Bruce King, and Dana Carmichael are facilitating capacity building in quality instruction through the implementation of Authentic Intellectual Work in selected Iowa classrooms. The Department plans to continue to extend this work across Iowa in collaboration with the AEAs.
- Dr. Richard Stiggins, Margaret Heritage, and other nationally known experts in formative assessment have developed training materials and have prepared Department consultants to integrate "classroom assessment for learning" practices into all the Department efforts centered on improving instruction.
- Dr. Richard Elmore has provided consultation and technical assistance about leadership and school reform to school administrators and other stakeholders in Iowa. The development of technical assistance for the Core Curriculum has utilized his writing about the core of educational practice. Elmore's publications describe the leadership needed to reform schools in the areas of curriculum, instruction, and assessment.
- Dr. John Smithson of the Wisconsin Center for Education Research has assisted the Department in completing a study of current content and instructional practices in high school literacy, mathematics, and science. The results of this study will be used to help the Department establish professional development priorities.

What assumptions guide this work?

Challenging instruction yields positive student outcomes. The Core Curriculum helps to focus the curriculum on higher order skills and increases the cognitive demands placed on students. This is essential to accelerate student achievement.

Educators need specific content area support to accomplish the goals established by the Iowa Core Content Standards and Benchmarks. The Iowa Core Content Standards and Benchmarks set broad, overarching learning goals for Iowa's students. These standards are clarified, refined, and extended by the Core Curriculum to create a more descriptive and specific focus for student learning. The specificity in the Core Curriculum enables teachers and administrators to integrate these into the existing curriculum and plan authentic learning experiences, establish worthwhile assessment practices, and develop accountability processes that are more meaningful to students, families, and communities.

State and national policy set the context for the Core Curriculum. Iowa legislation, policy, rules, and the state plan for implementing NCLB have requirements that must be addressed when designing a state-wide approach to a guaranteed and viable curriculum.

Student data drive decisions about curriculum and instruction. The primary sources of the student achievement data are district-level assessments, class-room-level assessments, and the Iowa Tests of Basic Skills and the Iowa Tests of Educational Development. Other sources of data include, but are not limited to achievement gap analysis, academic goals, graduation rates, drop-out rates, attendance rates, postsecondary success data, core program completion, and professional development participation. The Instructional Decision Making process provides direction to effectively meet each student's individual learning needs.

School teams use formative assessment effectively to monitor student learning and make decisions about effective instruction. Teachers examine student work to find out whether students have a deep understanding that enables them to apply knowledge. When teachers discover that adequate learning has not taken place, they re-teach and offer additional support for students.

Schools use program evaluation processes to monitor progress toward the initiative's goals and justify revisions in the action plans. Summative processes are used to evaluate the effectiveness of the initiative or instructional program and guide decisions about future directions.

The successful implementation of the Core Curriculum relies upon effective leadership and commitment from administration. School administrators will be actively engaged in the alignment process, the instructional review, and the development of subsequent changes in both content and instruction. Beyond alignment, there is considerable work for leadership: creating and sustaining a culture where

professional development is valued, leadership models and supports quality instruction, collaboration with colleagues around teaching and learning is the norm, and data is organized, analyzed, and interpreted to make instructional decisions around the Core Curriculum.

At the systems level, collaboration occurs among the Department, AEAs, and education stakeholders. Collaborative structures are needed to put the Core Curriculum into place. Stakeholder input, including that from business and industry, is essential to design a viable system and solve the problems that are inherent to any large scale systems change. A collaborative effort will be used to establish parameters, leadership, resources, and support to guide this reform effort.

Effective state-wide implementation requires a coordinated approach including consistent communication and differentiated delivery. Processes and tools will be implemented consistently across the state. Multiple points of entry will assist schools and AEAs in tailoring the Core Curriculum to most effectively meet the needs of each individual school.

Professional development is essential to build capacity for improved instruction in the core content areas. The Core Curriculum will only accomplish its desired intent if teachers develop the instructional skills to deliver the curriculum. Professional development of high quality with multiple opportunities for teachers and school leaders to participate in meaningful learning opportunities is needed to build knowledge and skills. Professional development engages school leaders and teachers in learning opportunities designed to

- Increase content knowledge and improve pedagogy;
- Facilitate rich discussions about instructional practices that will lead to pedagogical change;
- Keep participants focused on the essential concepts and skill sets and characteristics of effective instruction; and
- Collaborate to learn and apply new knowledge and skills.

The procedural work of conducting the alignment process and review of instructional practices are essential organizational efforts that will be critical anchor points for determining professional development priorities. The professional development efforts will focus squarely on teaching practices, learning new pedagogy and content knowledge. The curriculum alignment work and professional development focused on instruction are critical complimentary pieces.

Collaboration at the school level is essential to the Core Curriculum approach. Collaboration occurs among teachers, students, support staff, and administrators. Teachers working to integrate the Core Curriculum into classroom practice need the collegiality of peers to solve the problems inherent in learning new content and new skills. Teachers and school administrators will need to collaborate to analyze gaps in their curriculum, review instructional practices, and plan how to address identified needs. Such collaborative efforts will require time for teachers to meet on a regular

basis and a structure for the tasks to be addressed during
that time. Leadership and significant professional development resources will need to be committed.

The Core Curriculum relies on research and theory that are well grounded, nationally-recognized and reported in education's professional literature. The plans for the implementation of the Core Curriculum are based upon research and theory on effective practices in curriculum, instruction, and assessment within the content areas of literacy, mathematics, science, social studies, and 21st century skills. As teachers and administrators engage in research-based professional development, they will effectively implement instructional change.

The Core Curriculum helps local districts provide a guaranteed and viable curriculum. Guaranteed and viable curriculum is a combination of factors including:

- Providing opportunities for students to learn the content being assessed in each content area; and
- Ensuring that the articulated curriculum for a given course or grade level can be adequately addressed in the time available.*

The Core Curriculum DE Team and the Content Area Work Teams have followed the following steps to work toward ensuring that the Core Curriculum supports a guaranteed and viable curriculum:

- Identified and communicated the content considered essential for all students.
- Developed an alignment process to be used by local districts to ensure that the local curriculum has the rigor and relevance needed by students and to reduce the amount of content covered to allow for more authentic instruction.
- Developed a process to review instructional practices and assist local districts in reducing instructional time spent on non-essential content and find ways to protect instructional time.

*Definition adopted from Marzano, R. (2003) *What Works in Schools: Translating Research into Action.* ASCD.

In addition, the Department continues to work on alignment of assessment systems with the Core Curriculum by:

- Collaborating with the Iowa Testing Programs to develop tools to measure the essential learning for all students.
- Implementing "Assessment for Learning" and "Assessment of Learning" into all Department efforts focused on instruction.

The Core Curriculum will only be effective if it results in deep, lasting changes in the day-to-day work of teachers in every classroom. The initial alignment work and formation of recommendations and a document will have limited impact without active, sustained engagement and commitment to change practices. Teachers and administrators should expect changes in many parts of the system as they put these processes in place at the district, building, and classroom level.

Full implementation of the Core Curriculum is going to take time, persistence, and patience. Changing how teachers teach and the way people work is second order change (Marzano, Waters, & McNulty, 2005). Conducting the actions to operationalize the Core Curriculum is likely to be challenging. Leaders and practitioners will need to stay the course and support each other.

The Core Curriculum provides the mechanism to implement multiple elements of the school reform initiative. The Iowa High School Project and the Iowa Focus on High School Reform establish the need for high expectations, rigorous and relevant curriculum, professional development, aligned assessments, and collaborative leadership. The Core Curriculum offers the structures and tools to help accomplish these priorities.

Who is leading the work to develop and build the statewide capacity to implement the Iowa Core Curriculum?

- The DE Core Curriculum Team has been formed to support implementation of the Core Curriculum statewide. The DE Core Curriculum Team includes consultants who represent literacy, mathematics, science, social studies, students with disabilities, early childhood, assessment, school improvement, leadership, and high school reform.

- The DE Core Curriculum Team works in conjunction with the Core Curriculum Advisory Team. This team is composed of representatives from urban, small and rural school districts, AEAs, and key stakeholder groups including the Iowa Association of School Board, Iowa State Education Association, and School Administrators of Iowa. Also included are representatives from the teacher preparation programs at the state's three Regents institutions: Iowa State University, University of Iowa, and University of Northern Iowa. This team will be charged with advising the Department in proposing a time line for implementation, assisting with creating the network, planning the professional development for the network, and monitoring the progress of the network.

School districts and the area education agencies play a critical role in delivering professional development and technical assistance as the Core Curriculum is implemented across the state. A network of practitioners will be organized to deliver the training and facilitation needed by schools to conduct the following actions critical to the successful implementation of the Core Curriculum:

- Aligning the district's standards, benchmarks, and curriculum to the Core Curriculum;
- Supporting improvements in instruction in the core content areas;
- Providing leadership and support for the successful implementation of the Core Curriculum in all schools;

- Identifying consistent practices and processes to ensure the successful implementation of Core Curriculum;
- Providing the structures and tools to enable schools to put the Core Curriculum in place;
- Disseminating information, technical assistance, and tools; and
- Interpreting state-level policy regarding requirements for accountability

The network of trainers/facilitators will participate in capacity building to ensure the consistent implementation of technical assistance materials. The network will work directly with schools to complete an alignment process and subsequent report identifying gaps. This group of trainers/facilitators will also play a collaborative role in helping school leaders establish a professional development plan for educators to improve their instructional practices that are aligned with the Core Curriculum.

What should be considered in the design for successful implementation?

It is the intent of the Department that the successful implementation of the Core Curriculum will be consistent across the state. Consistent technical assistance, processes, tools will be utilized by every school with the support of their AEA.

As the Department undertakes the process of designing an implementation plan, the following questions are among those that need to be addressed:

- What support to school leaders need to effectively implement the Iowa Core Curriculum?
- To what extent do local standards, benchmarks, and curriculum align to the Core Curriculum?
- How might schools engage their staff in reviewing their curriculum content and instruction?
- What processes will result in all schools fully implementing the Core Curriculum? What resources will be needed?
- What professional development and technical assistance are needed and how should they be delivered and supported?
- How will the AEA, local school districts, and the Department work in concert to effectively implement the Core Curriculum?

The Department is moving forward to ensure that professional development is aimed at improving curriculum, instruction, and assessment is aligned with and supportive of the Core Curriculum. A description of the alignment is being developed in literacy, mathematics, science, and other priority content areas. See the DE web site www.iowa.gov/educate/content/view/674/1023/.

Timely communication about the expectations for school personnel, requirements for implementation, and how to access support will be provided.

Collaboration among the DE, AEAs, local districts, schools, and key stakeholders will guarantee each and every Iowa student a world-class education focused on essential content made meaningful through compelling and effective instructional strategies. Through this collective work, Iowa will maintain its reputation of providing the best educational opportunities available.

References

Elmore, R. F. (2002). *Bridging the gap between standards and achievement: An imperative for professional development in education*. Washington, DC: Albert Shanker Institute

Elmore, R. F. (2003). A plea for strong practice. *Educational Leadership. 61(3)*, 6-10.

Elmore, R. F. (2002).Hard questions about practice. *Educational Leadership. 59(8)*, 22-25.

Gamoran, A., Porter, A.C., Smithson, J.L., & White, P.A. (1997).Upgrading high school mathematics instruction: Improving learning opportunities for low-achieving, low-income youth. *Educational Evaluation and Policy Analysis. (19)2*, 325-338.

Hargreaves, A. & Fink, D., (2004).The seven principles of sustainable leadership. *Educational Leadership. 61(7)*, 8-11.

Heritage, H.M. (2008). *Formative Assessment for Literacy, Grades K-6*. Thousand Oaks, CA: Corwin Press.

Marzano, R.J. (2003). *What works in schools: Translating research into action*. Alexandria, VA: Association for Supervision and Curriculum Development.

Marzano, R.J., Waters, T., & McNulty, B.A. (2005). *School leadership that works: From research to results.* Alexandria, VA: Association for Supervision and Curriculum Development.

McKnight, C.C., Crosswhite, F.J., Dossey, J.A., Kifer, E., Swafford, J.O., Travers, K.J., et al. (1987). *The underachieving curriculum: Assessing U. S. school mathematics from an international perspective.* Champaign, IL: Stipes.

Niebling, B.C., Roach, A.T., & Rahn-Blakeslee, A. (2008). Best practices in curriculum, instruction, and assessment alignment. In A. Thomas & J. Grimes (Eds.), *Best practices in school psychology, (4)*5, 1059-1072. Bethesda, MD: National Association of School Psychologists.

Newmann, F.M., King, M.B., Carmichael, D.L. (2007). *Authentic instruction and assessment*. Des Moines, IA: Iowa Department of Education.

Rowan, B. (1998). The task characteristics of teacher: Implications for the organizational design of schools. In R. Bernhardt, D. N. Hedley, G. Cattaro, & V. Swopoloulos (Eds.), *Curriculum leadership: Rethinking schools for the 21st century.* Creshkills, NJ: Hampton Press.

Schmidt, W.H. (1983a). High school course-taking: A study of variation. *Journal of Curriculum Studies, 15*(2), 167-182.

Schmidt, W.H. (1983b). High school course-taking: Its relationship to achievement. *Journal of Curriculum Studies, 15*(3), 311-332.

Sebring, P.A. (1987). Consequences of differential amounts of high school coursework: Will the new graduation requirements help? *Educational Evaluation and Policy Analysis, 9*(3), 257-273.

Stiggins, R.J., Chappuis, J., & Chappuis, S. (2006). *Classroom Assessment for Student Learning.* Portland, OR: Education Testing Service.

Stigler, J.W., & Hiebert, J. (1999). *The teaching gap: Best ideas from the world's teachers for improving education in the classroom*. New York, NY: Harcourt Brace Jovanovich.

Walberg, H.J., & Shanahan, T., (1983). High school effects on individual students. *Educational Researcher, 12(7).* 4-9.

Iowa Core Curriculum Implementation Planning

Each school district and accredited non-public school in Iowa is required to develop a written plan to describe their implementation of the Iowa Core Curriculum. This document provides a process to facilitate planning and a protocol for meeting the requirements to develop an implementation plan. *The Iowa Core Curriculum Implementation Planning Protocol* is provided as guidance for use by school Leadership Teams. Leadership Teams are encouraged to engage teachers, administrators, and other stakeholders in an ongoing process that begins with preliminary dialogue, analysis of data, coordination of resources, and initial examination of content, instruction, and assessment. This initial work leads to continued in-depth dialogue about alignment of content, instruction and assessment, improved teaching practices, improved systems of support, and increased student engagement.

The Iowa Core Curriculum Vision

Each and every K-12 student will learn the Essential Concepts and Skill Sets identified in the Iowa Core Curriculum for life in the 21st century.

- Each K-12 educator will embed the Essential Concepts and Skill Sets in rigorous and relevant instruction informed by ongoing formative assessment.
- Each and every educational leader will support and ensure an aligned system of content, instruction, and assessment, focused on the Iowa Core Curriculum Essential Concepts and Skill Sets.
- The Iowa Department of Education, Area Education Agencies (AEAs), Local Education Agencies (LEAs), and collaborative partners will work together to provide the necessary systems of support to establish and sustain structures as needed for the Essential Concepts and Skill Sets, instruction, and assessment.

Full Implementation of the Iowa Core Curriculum

Districts and accredited non-public schools are encouraged to construct their Iowa Core Curriculum Implementation Plan over an extended period of time. Initial portions of the plan may be completed during the 2008-2009 school year, with remaining portions of the Plan added as the Leadership Team learns more about how to use the processes and protocols provided by the Core Curriculum Network.

Definition of Full Implementation: Full implementation is accomplished when the school or district is able to provide evidence that an ongoing process is in place to ensure that each and every student is learning the Essential Concepts and Skill Sets of the Iowa Core Curriculum. A school that has fully implemented the Iowa Core Curriculum is engaged in an ongoing process of data gathering and analysis, decision making, identifying actions, and assessing impact around alignment and professional development focused on content, instruction, and assessment. The school is fully engaged in a continuous improvement process that specifically targets improved student learning and performance.

Legislated Deadlines

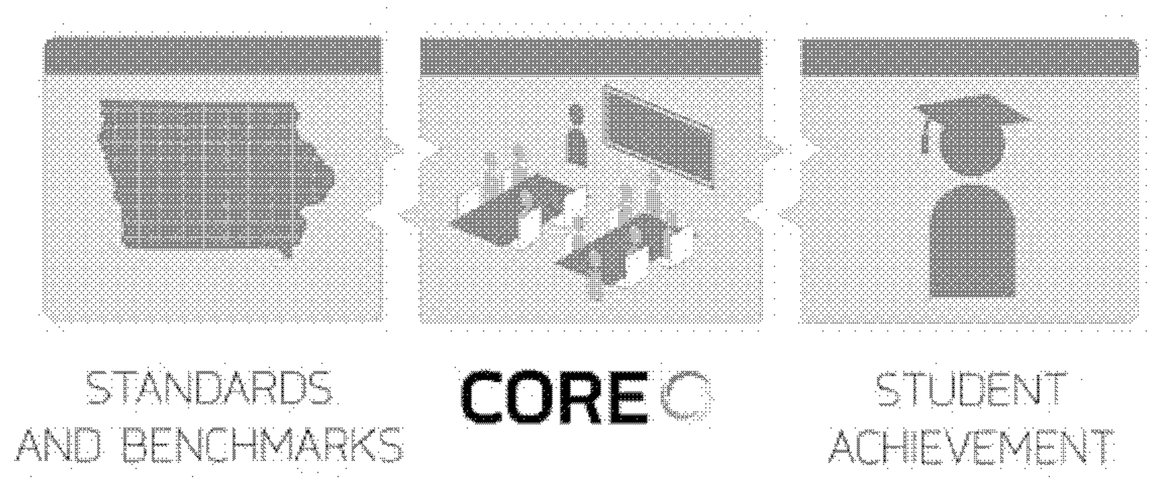
District and accredited nonpublic schools must:

1. Respond to all outcomes and targets of the implementation plan
    - Due July 1, 2010, for grades 9-12
    - Due July 1, 2012, for grades K-8
2. Complete an initial alignment of local content with Core Curriculum Essential Concepts and Skill Sets in Literacy, Mathematics, Science, Social Studies, and 21st Century Skills (Civic Literacy, Health Literacy, Financial Literacy, Technology Literacy, and Employability Skills) and steps to address any gaps
    - Due July 1, 2012, for grades 9-12
    - Due 2013-2014, for grades K-8
3. Complete initial analysis of alignment of content, instruction, assessment, and steps to address gaps
    - Due July 1, 2012, for 9-12
    - Due July 1, 2014, for K-8
4. Complete initial analysis of professional development needs in the areas of instruction and assessment and integrate into the District Professional Development Plans (following CSIP procedures)
    - Due July 1, 2012, for 9-12
    - Due 2013-2014, for K-8

Technical Assistance to Support Districts and Schools

The Iowa Department of Education and the AEAs are collaborating to provide an integrated system of supports to facilitate local districts and schools to engage in a continuous planning process to successfully implement the Iowa Core Curriculum. The Iowa Core Curriculum Network will work with each district to help local teams learn about the Core Curriculum and build their own picture of how they will go about implementing each outcome of the Core Curriculum.

Materials and processes developed will be continuously revised based on current knowledge and critical feedback from constituents. It is important that AEAs and districts provide such feedback, as it is intended to be a dynamic, fluid process that changes over time as new tools, processes and technical assistance are developed to best meet the needs of Iowa's children and youth.



The Iowa Core Curriculum Outcomes

There are six outcomes in the Implementation Plan, that when fully implemented will establish:

- An integrated approach to address the systems-level needs of students and educators through the full engagement and focused actions of Leadership, Schools and support agencies, and the Community. The outer circle on the graphic represents the interaction among these three components and the various systems, processes, and initiatives critical in supporting the work of teaching and learning.

- An aligned system of Content, Instruction, and Assessment, focused on the Iowa Core Curriculum Essential Concepts and Skill Sets. The inner circle focuses attention on:

  - What to teach (Content)
  - How to teach (Instruction)
  - How to determine whether students are learning important content and skills and how to help students to keep track of their own progress (Assessment)

The outcomes are listed below with statements that describe the "theory of action" of how these outcomes will accomplish the intended results.

Leadership

Outcome 1: School leaders build and sustain system capacity to implement the Iowa Core Curriculum.

If leadership actions of administrators, teachers, and the school board are focused and committed to providing the expertise, guidance, and resources needed to build capacity and support teaching and learning, **then** the implementation of the Iowa Core Curriculum will result in increased student learning and performance.

Community

Outcome 2: Community members and other supporting agencies work together to support the implementation of the Iowa Core Curriculum.

If multiple partners including parents, school boards, business and industry, supporting agencies, and other community entities are interdependent, **then** schools will function as an integrated system to provide a coordinated approach, consistent communication, additional opportunities for learning, and the ongoing supports needed for students to be successful.

Schools

Outcome 3: A continuous improvement process to improve teaching and learning is used at the district and school level.

If the Iowa Core Curriculum and related school improvement processes function as ongoing continuous improvement processes based on data, **then** the system will constantly adjust and improve to yield positive outcomes for all students.

Content – Instruction - Assessment

Outcome 4: District leaders and other educators monitor and use data to increase the degree of alignment of each and every student's enacted curriculum and other relevant educational opportunities to the Iowa Core Curriculum.

If district leaders (administrators, teachers, and the school board) and other educators monitor and increase the degree of alignment among the intended, enacted, and assessed curriculum, **then** the quality of instruction will improve and student learning and performance will increase.

Outcome 5: Educators engage in professional development focused on implementing Characteristics of Effective Instruction and demonstrate understanding of Essential Concepts and Skill Sets.

If professional development is based on the Iowa Professional Development Model and focused on improved content, instruction, and assessment practices and educators fully implement what they learn, **then** student learning and performance will increase. (For a list of the Characteristics of Effective Instruction see page 16.)

Outcome 6: Educators implement effective instructional practices to ensure high levels of learning for each and every student.

If content is challenging and relevant and teachers routinely deliver instruction that demonstrates the Characteristics of Effective Instruction, **then** student learning and performance will increase.

The Iowa Core Curriculum Implementation Planning Protocol

The planning protocol on the following pages includes the outcomes, targets describing what the district/school plans to accomplish, actions to be taken, and indicators of how the actions will be measured. The indicators listed in this document are those that the Department and AEA will use to monitor state-wide progress on implementing the Iowa Core Curriculum. (Indicators will be distributed soon.)

For each outcome, districts/schools are expected to describe in writing how they plan to address the targets. An on-line action plan format will be provided for districts and schools to record their plans for each outcome.

The Iowa Core Curriculum Implementation Plan document and protocol has been reviewed by a variety of constituents including the groups listed below. The input from the teachers, administrators, consultants, university faculty and other stakeholders represented on these groups greatly enhanced the usefulness of these materials.

- The Iowa Core Curriculum Advisory Team (including school districts, AEAs, ISEA, IASB, SAI and higher education)
- The Iowa Core Curriculum Work Teams
- Iowa Core Curriculum AEA Steering Committee
- Iowa Core Curriculum Network
- Mid-continent Research for Education and Learning (McREL)

Iowa CORE Curriculum

Implementation Planning Protocol

Leadership

Outcome 1: School leaders build and sustain system capacity to implement the Iowa Core Curriculum.

If leadership actions of administrators, teachers, and the school board are focused and committed to providing the expertise, guidance, and resources needed to build capacity and support teaching and learning, **then** the implementation of the Iowa Core Curriculum will result in increased student learning and performance.

Targets What are we trying to accomplish?	Actions What are we going to do to reach our targets?
1a. Implementation of leadership behaviors to sustain the Iowa Core Curriculum.	1.a.1. District Leadership Team is established and operating to implement Iowa Core Curriculum.
	1.a.2. District Leadership Team consistently communicates a clear and shared vision for the Iowa Core Curriculum.
	1.a.3. District Leadership Team understands and manages the change process.
	1.a.4. District Leadership Team demonstrates a deep understanding of the intent of the Iowa Core Curriculum.
	1.a.5. District Leadership Team engages leaders and teachers in a collaborative process to create an Iowa Core Curriculum Implementation Plan.
	1.a.6. District Leadership Team deploys resources to support and sustain the vision and implementation of the Iowa Core Curriculum in their district.
	1.a.7. District Leadership Team has established processes and procedures to sustain the implementation of the Iowa Core Curriculum.
	1.a.8. District Leadership Team engages in discussion with the local school board regarding progress on the Iowa Core Curriculum.

Outcome 1: Guiding Questions

The Leadership Team should select those questions that are relevant to their current local context.

Leadership Team:

- Who are the key leaders in your district who should be included in planning? How do you define "leader"?
- Is there a building/district Leadership Team currently in place? If yes, does the existing Leadership Team adequately represent the staff? Community? Stakeholders? Who needs to be added? Are the various teacher assignments and role groups represented?
- What are the roles and responsibilities of the Leadership Team? How will leaders create a sense of urgency and build commitment within the school and community?

Capacity Building:

- What are the leadership behaviors needed to implement the Iowa Core Curriculum? Do administrators implement the Iowa Standards for School Leaders that are linked to the Iowa Core Curriculum? What leadership behaviors should be improved or enhanced?
- How will the district build capacity of the Leadership Team to understand the Iowa Core Curriculum and be able to apply leadership responsibilities? How are leaders supported to meet the Iowa Standards for School Leaders that align with the Iowa Core Curriculum?
- How will teachers be supported to improve their skills needed to lead and support school improvement?

Resources:

- What resources (e.g., funding, time, training materials, community resources, and external consultant support) will be needed to support school staff to learn about the Core Curriculum?
- What resources are needed that might be available through the community? What supports are available through the AEA?

Communication:

- What is the communication plan for all educators? What are the common "talking points" that should be used with teachers, administrators, and other faculty members?
- How will the district's vision of the Core Curriculum be communicated to all stakeholders?

Implementation Plan:

- What collaborative processes are needed to develop the Implementation Plan?

Outcome 1 aligns with Iowa School Leadership Standards 1, 2, 3, and 4 and Iowa Teaching Standards 1 and 8.

Community

Outcome 2: Community members and other supporting agencies work together to support the implementation of the Iowa Core Curriculum.

If multiple partners including parents, school boards, business and industry, supporting agencies, and other community entities are interdependent, **then** schools will function as an integrated system to provide a coordinated approach, consistent communication, additional opportunities for learning, and the ongoing supports needed for students to be successful.

Targets What are we trying to accomplish?	Actions What are we going to do to reach our targets?
2.a. Coordination of community and other systems to support Iowa Core Curriculum implementation	2.a.1. Community members understand the Iowa Core Curriculum.
	2.a.2. Community members participate in the development and implementation of the Iowa Core Curriculum Implementation Plan.
	2.a.3. Learning supports are coordinated to support the Iowa Core Curriculum.

Outcome 2: Guiding Questions

The Leadership Team should select those questions that are relevant to their current local context.

Community Understanding:

- What groups exist as part of the school district (e.g., School Board, School Improvement Advisory Committee, Teacher Quality Committee, Parent-Teacher Organization, other parent groups)? Who are the stakeholders from business and industry?
- What are the common "talking points" that should be used with stakeholders? How will the vision be communicated to the community?
- How will the Leadership Team create awareness and build understanding about the Core Curriculum in the community?
- Are the 21st century skills being emphasized at every opportunity?

Implementation Plan:

- What processes will be used to engage identified representatives of the community in developing the Implementation Plan?
- What student/teacher/administrative/parent/community data will various groups study to prepare to develop the plan?
- What is the plan to communicate information about the planning process with all educators and community constituents?

Support Systems:

- What are the decision-making structures that are needed to facilitate collaborative work among supporting systems and organizations?
- What activities, programs, services, initiatives and structures are in place to remove barriers and facilitate student learning and development? What data sources are used for determining needs?
- How will this planning process fit with other district planning processes (CSIP, DINA/SINA, Teacher Quality Committee, etc.?)

Outcome 2 aligns with Iowa School Leadership Standard 4 and Iowa Teaching Standards 1 and 8.

Schools

Outcome 3: A continuous improvement process to improve teaching and learning is used at the district and school level.

If the Iowa Core Curriculum and related school improvement processes function as ongoing continuous improvement processes based on data, **then** all elements of the system will constantly adjust and improve to yield positive outcomes for all students.

Targets What are we trying to accomplish?	Actions What are we going to do to reach our targets?
3.a. Data used to develop Iowa Core Curriculum Implementation Plan	3.a.1. District Leadership Team completes the Core Curriculum Self-Study and use resulting data to write implementation plan.
3.b. Data used to monitor progress of Core Curriculum implementation over time	3.b.1. District Leadership Team completes Core Curriculum Self-Study yearly and documents progress of Core Curriculum implementation over time.
3.c. District/school used processes and procedures for engaging stakeholders, setting goals, developing school improvement plans, and integrating various plans	3.c.1. District Leadership Team and others, as appropriate; develop a cycle for document/plan review for the purposes of incorporating elements of the Iowa Core Curriculum and integrating various planning processes.

Outcome 3: Guiding Questions

The Leadership Team should select those questions that are relevant to their current local context.

Data Use:

- What defines our district's continuous improvement process?
- What additional data will the district collect? What are the specific sources of data for student outcomes and teacher behaviors?
- What is the schedule for reviewing and analyzing data to inform next steps? How will the district ensure that the process for reviewing local alignment is continuous?
- What are the procedures and routines that will sustain implementation?
- How will information gained from the continuous improvement process facilitate teacher and administrator professional growth (evaluation and professional development)?
- What considerations need to be taken to address staff and administrator turnover?

Self-Study:

- How will the Leadership Team examine implications of student achievement results and the district Self-Study of implementation of the Core Curriculum?
- How will data about the effectiveness of instruction in a classroom be used to identify areas of improvement on an ongoing basis?
- How will this data keep efforts focused on priorities?

Process Integration:

- What procedures and/or routines are already in place to assist in this work? How does this work connect to SINA/DINA, CSIP, AYP, and APR?
- Are the findings related to the continuous improvement of teaching and learning being widely communicated to stakeholders?

Outcome 3 aligns with Iowa School Leadership Standards 1 and Iowa Teaching Standards 1 and 5.

Content – Instruction - Assessment

Outcome 4: District leaders and other educators monitor and use data to increase the degree of alignment of each and every student's enacted curriculum and other relevant educational opportunities to the Iowa Core Curriculum.

If district leaders (administrators, teachers, and the school board) and other educators monitor and increase the degree of alignment among the intended, enacted, and assessed curriculum, **then** the quality of instruction will improve and student learning and performance will increase.

Targets **What are we trying to accomplish?**	**Actions** **What are we going to do to reach our targets?**
4.a. Expertise in alignment	4.a.1. Educators learn about alignment processes to implement the Iowa Core Curriculum.*
4.b. Alignment preparation	4.b.1. Educators select the processes and tools that will be used locally (LEA/School).
	4.b.2. Educators learn to use the processes and tools selected.
4.c. Alignment implementation	4.c.1. Educators implement the processes and tools selected.
	4.c.2. Educators address students' enacted curriculum when applying processes and tools.
4.d. Alignment beyond content	4.d.1. Educators address the alignment of instruction to assessment.

*The Iowa Core Curriculum Network will provide alignment processes and tools and prepare Leadership Teams to use them. Districts/schools may wait to begin planning for this outcome until they have learned more about these alignment resources.

Outcome 4: Guiding Questions

The Leadership Team should select those questions that are relevant to their current local context.

Alignment Expertise:

- How will you ensure that all members of the instructional staff are involved in the alignment work ?
- How will the Leadership Team implement procedures to describe the enacted curriculum?
- How do you know implementers have the skills/expertise to use the processes and tools?

Alignment Preparation:

- How will all content areas be addressed? What is the schedule for engaging in alignment processes for each area?
- How will you ensure that the enacted curriculum is the assessed curriculum?
- How will the district support individuals (educators, students, parents, etc.) with the change process?
- What are the tools and procedures needed for data collection, storage, analysis, display, reporting, and decision-making for action planning next steps? How will data be shared and with whom? Who will make decisions?
- What are the tools and procedures needed to ensure that students can demonstrate the Essential Concepts and Skill Sets? How will you examine the cognitive demand and relevance of what students are learning?
- What are the tools and procedures needed to ensure that the enacted curriculum is experienced by students? What tools and procedures are already used routinely?

Alignment Implementation:

- How will you engage students in learning and applying 21st century skills?
- How will the Leadership Team facilitate dialogue with educators about the enacted curriculum?
- How will collaborative structures be organized for teachers to engage in dialogue about alignment?
- What is the schedule for engaging in dialogue?

Outcome 4 aligns with Iowa School Leadership Standard 2 and Iowa Teaching Standards 2 and 3.

Content – Instruction - Assessment

Outcome 5: Educators engage in professional development focused on implementing Characteristics of Effective Instruction and demonstrate understanding of Essential Concepts and Skill Sets.

If professional development is based on the Iowa Professional Development Model and focused on improved content, instruction, and assessment practices and educators fully implement what they learn, **then** student learning and performance will increase.

Targets What are we trying to accomplish?	Actions What are we going to do to reach our targets?
5.a. Data guide professional learning	5.a.1 Educators collect and use instructional review* and student achievement and alignment data to guide professional development.
5.b. Effective professional development provided	5.b.1. Educators engage in professional development that contains all elements of effective professional development for student achievement (Iowa Professional Development Model).

*The Iowa Core Curriculum Network will provide instructional review and alignment processes and prepare Leadership Teams to use them. Districts/schools may wait to begin planning for this outcome until they have learned more about the instructional review and alignment resources.

Outcome 5: Guiding Questions

The Leadership Team should select those questions that are relevant to their current local context.

Professional Development Data:

- How will district leaders analyze data from content alignment work and from instructional reviews to revise existing professional development priorities and set new goals for professional development? What are the gaps in professional development offerings needed to prepare staff to implement the Core Curriculum?
- What other sources of student data inform the professional development plans (i.e., achievement data, enrollment, attendance data, drop out rate, student performance data in academic areas, etc.)?
- How will the district determine the level of participation and engagement in professional learning opportunities? How will implementation data be used to inform the design of professional development learning opportunities?
- How do you know the Iowa Core Curriculum is being implemented with fidelity in the building? If professional development is not being implemented as intended, what should be done next?
- What is the current status of district and building-level professional development? How can we use the Iowa Professional Development Profile to improve the professional development and implementation of the Iowa Core Curriculum?

Provision of Professional Development:

- How are all administrators and teachers engaged? What collaborative opportunities are in place in our district?
- What is needed to sustain professional development that builds capacity to deliver the Iowa Core Curriculum? (Some examples of professional development that supports the Characteristics of Effective Instruction and Essential Concepts and Skill Sets include: Every Student Counts, Every Child Reads, Every Leaner Inquires, Authentic Intellectual Work, etc.)
- What changes are needed to update or replace the District and Attendance Center Professional Development Plans to ensure that teachers and administrators have needed knowledge and skills?
    - Essential Concepts and Skill Sets including the 21st Century Skills
    - Characteristics of Effective Instruction
    - Leadership to support the Core Curriculum
    - Managing the change process effectively with focus on culture, communication, input, and order
    - Use of data
- What processes are in place to ensure that the Individual Professional Development Plans support the district and attendance center goals for improving instruction and assessment?
- How are mentors supporting new teachers to learn skills related to the Core Curriculum?
- How might technology be used?
- How might the Network support our professional development? What other supports are available? Who will deliver professional development? If external expertise is needed, how will skillful trainers be accessed?

Outcome 5 aligns with Iowa School Leadership Standards 4 and Iowa Teaching Standard 7.

Content – Instruction – Assessment

Outcome 6: Educators implement effective instructional practices to ensure high levels of learning for each and every student.

If content is challenging and relevant and teachers routinely deliver instruction that demonstrates the characteristics of effective instruction, **then** student learning and performance will increase.

Targets What are we trying to accomplish?	Actions What are we going to do to reach our targets?
6.a. Initial implementation of priority Characteristics of Effective Instruction in classrooms	6.a.1. Educators select critical characteristic(s) of effective instruction to be the initial focus of improvement efforts implemented in the district which include supports for instruction at the core, supplemental, and intensive levels*.
	6.a.2. Educators identify the process and tool(s) to be used for the instructional review based on the critical characteristics by examining baseline and progress (e.g., where teachers are in terms of implementing the characteristics).
6.b Continuous implementation of the Characteristics of Effective Instruction in classrooms	6.b.1. Educators select critical Characteristic(s) of Effective Instruction to be the focus of improvement efforts implemented in the district which include supports for instruction at the core, supplemental, and intensive levels.
	6.b.2. Educators use the process and tool(s) to routinely conduct instructional review based on the critical Characteristics by examining baseline and progress (e.g., where your teachers are in terms of implementing the characteristics).
	6.b.3 Educators implement process/tool
6.c. Engaged students (rigor, relevance, participation, challenging work etc.)	6.c.1. Educators implement a broad range of instructional strategies and activities to support student access/success in the Iowa Core Curriculum (in traditional and non-traditional settings and across community, home, and business settings).

*The Iowa Core Curriculum Network will provide technical assistance on the Characteristics of Effective Instruction. Districts/schools may wait to begin planning for this outcome until they have learned more about the Characteristics of Effective Instruction.

Outcome 6: Guiding Questions

The Leadership Team should select those questions that are relevant to their current local context.

Characteristics of Effective Instruction:

- How will teachers and administrators be engaged in planning the review process?
- How will the district or school ensure that all staff members understand the purposes of the review process, are familiar with tools, and have the skills to use them? How might tools already in use be adapted?
- How will the entire staff be engaged in the review process?

  Options 1: If a district uses an existing instructional review process, how will the district ensure that the current review process examines the Characteristics of Effective Instruction and the Essential Concepts and Skill Sets?

  Option 2: If a district does not have an instructional review process, how will the district engage in learning opportunities to gain skills in the use of Core Curriculum tools to examine the Characteristics of Effective Instruction and the Essential Concepts and Skill Sets?

  Option 3: If a district does not have an instructional review process, what process will the district use to develop an instructional review showing classroom evidence of the Characteristics of Effective Instruction and the Essential Concepts and Skill Sets?
- What leadership actions and supports are in place at district and building level that will contribute to ongoing sustained attention to improving content, pedagogy, and formative assessment practices?
- How will school leaders and teachers establish norms in the workplace to ensure that teachers routinely design and implement instruction focused on developing deep conceptual and procedural understanding, using the Characteristics of Effective Instruction including:

  Teaching for Understanding
  Providing Rigorous and Relevant Curriculum
  Teaching for Learner Differences
  Assessment for Learning
  Student-Centered Classrooms
- How will the analysis of alignment data be used to inform professional development plans and inform program decisions? What changes will be needed in the professional development plans to ensure that all staff have the knowledge and skills to implement the Characteristics of Effective Instruction?

Student Engagement

- How can students be involved in decision making about improving learning opportunities and student engagement?
- How will the Instructional Decision Making process help with data gathering, analysis, and decision making? Are assessment processes balanced? How will student work be used as formative assessment and to ensure alignment to the written curriculum?
- How does the Instructional Decision Making process, learning supports, and teaching for learning differences provide differentiation for all students?

Outcome 5 aligns with Iowa School Leadership Standards 2 and Iowa Teaching Standards 4 and 5.

Document distributed November 24, 2008.

Sec. 8. NEW SECTION. 284.7 IOWA TEACHER CAREER PATH.
To promote continuous improvement in Iowa's quality teaching workforce and to give Iowa teachers the opportunity for career recognition that reflects the various roles teachers play as educational leaders, an Iowa teacher career path is established for teachers employed by participating school districts. A participating school district shall raise teacher salaries to meet the requirements of this section.
3 See chapter 177, §5 herein3 The Iowa teacher career path and salary minimums are as follows:
1. Effective July 1, 2001, the following career path levels are established and shall be implemented in accordance with this chapter:
a. BEGINNING TEACHER.
(1) A beginning teacher is a teacher who meets the following requirements:
(a) Has successfully completed an approved practitioner preparation program as defined in section 272.1.
(b) Holds a provisional teacher license issued by the board of educational examiners.
(c) Participates in the beginning teacher mentoring and induction program as provided in this chapter.
(2) The participating district shall increase the district's minimum salary for a first-year beginning teacher by at least one thousand five hundred dollars per year above the minimum salary paid to a first-year beginning teacher in the previous year unless the minimum salary for a first-year beginning teacher exceeds twenty-eight thousand dollars.
b. CAREER TEACHER.
(1) A career teacher is a teacher who meets the following requirements:
(a) Has successfully completed the beginning teacher mentoring and induction program and has successfully completed a comprehensive evaluation as provided in this chapter.
(b) Is reviewed by the school district as demonstrating the competencies of a career teacher.
(c) Holds a valid license issued by the board of educational examiners.
(d) Participates in teacher career development as set forth in this chapter and demonstrates continuous improvement in teaching.
(2) The participating district shall provide a two thousand dollar difference between the average beginning teacher salary and the minimum career teacher salary, unless the school district has a minimum career teacher salary that exceeds thirty thousand dollars.
2. It is the intent of the general assembly to establish and require the implementation of and provide for the implementation of the following additional career path levels by July 1, 2003:
a. CAREER II TEACHER.
(1) A career II teacher is a teacher who meets the requirements of subsection 1, paragraph "b", has met the requirements established by the school district that employs the teacher, and is evaluated by the school district as demonstrating the competencies of a career II teacher. The teacher shall have successfully completed a comprehensive evaluation in order to be classified as a career II teacher.
(2) It is the intent of the general assembly that the participating district shall establish a minimum salary for a career II teacher that is at least five thousand dollars greater than the minimum career teacher salary. It is further intended that the district shall adopt a plan that facilitates the transition of a career teacher to a career II level.
b. ADVANCED TEACHER.
(1) An advanced teacher is a teacher who meets the following requirements:

(a) Receives the recommendation of the review panel that the teacher possesses superior teaching skills and that the teacher should be classified as an advanced teacher.
(b) Holds a valid license from the board of educational examiners.
(c) Participates in teacher career development as outlined in this chapter and demonstrates continuous improvement in teaching.
(d) Possesses the skills and qualifications to assume leadership roles.
(2) It is the intent of the general assembly that the participating district shall establish a minimum salary for an advanced teacher that is at least thirteen thousand five hundred dollars greater than the minimum career teacher salary. In conjunction with the development of the review panel pursuant to section 284.9, the department shall make recommendations to the general assembly by January 1, 2002, regarding the appropriate district-to-district recognition for advanced teachers and methods that facilitate the transition of a teacher to the advanced level.
3. A teacher shall be promoted one level at a time and a teacher promoted to the next career level shall remain at that level for at least one year before requesting promotion to the next career level.
4. If a comprehensive evaluation for a teacher is conducted in the fifth year of the teacher's status at the career level, and indicates that the teacher's practice no longer meets the standards for that level, a comprehensive evaluation shall be conducted in the next following school year. If the comprehensive evaluation establishes that the teacher's practice fails to meet the standards for that level, the teacher shall be ineligible for any additional pay increase other than a cost of living increase.
4 See chapter 177, §6 herein4
5. A teacher employed in a participating district shall not receive less compensation in that participating district than the teacher received in the school year, preceding participation, as set forth in section 284.4 due to implementation of this chapter. A teacher who achieves national board for professional teaching standards certification and meets the requirements of section 256.44 shall continue to receive the award as specified in section 256.44 in addition to the compensation set forth in this section.

Iowa Code, Chapter 273.10 and 11
AEA Accreditation Standards with Iowa Administrative Code Chapter 281-72 (273) Descriptors

Chapter 72.4(1) School/ Community Planning

- The AEA shall deliver services for school-community planning that assist school and school districts in:
  - Assessing needs of all students;
  - Developing collaborative relationships among community agencies;
  - Establishing shared direction;
  - Implementing actions to meet goals; and
  - Reporting progress toward goals.

Chapter 72.4(2) Professional Development

- The AEA shall deliver professional development services for schools, school districts and AEA instructional, administrative, and support personnel that:
  - Anticipates and responds to schools' and school districts' needs;
  - Supports proven and emerging educational practices;
  - Aligns with school and school district comprehensive long-range and annual improvement goals;
  - Uses adult learning theory;
  - Supports improved teaching;
  - Uses theory, demonstration, practice, feedback, and coaching; and
  - Addresses professional development activities as required by the Iowa Code or administrative rules.

Chapter 72.4(3) Curriculum, Instruction, and Assessment

- The AEA shall deliver curriculum, instruction, and assessment services that address the areas of:
  - Reading;
  - Language arts;
  - Mathematics;
  - Science; but
  - May also be applied to other curriculum areas.
- These services support the development, implementation, and assessment of rigorous content standards in, but not limited to, reading, mathematics, and science.
- The AEA assists schools and school districts in
  - Gathering and analyzing student achievement data as well as data about the learning environment;
  - Comparing those data to the external knowledge base; and
  - Using that information to guide school and school district goal setting and implementation of actions to improve student learning.

Chapter 72.4(4) Diverse Learner Needs

- The AEA shall address the diverse learning needs of all children and youth, including but not limited to services which address gifted and talented students, and meet the unique needs of students with disabilities who require special education.
- This includes students who are:
  - Gifted and Talented;
  - Students with disabilities who require special education; and
  - Others
- Diverse Learner Services:
  - Provide support to schools and school districts; and
  - Include special education compliance with Iowa Administrative Rules of Special Education.

Chapter 72.4(5) Multicultural, Gender-Fair

- The AEA shall provide services that support multicultural, gender-fair approaches to the educational program pursuant to Iowa Code section 256.11.
- These services assist schools and school districts to:
  - Take actions that ensure all students are free from discriminatory acts and practices;
  - Establish policies and take actions that ensure all students are free from harassment;
  - Incorporate into the educational program instructional strategies and student activities related to responsibilities, rights, and the respect for diversity which are necessary for successful citizenship in a diverse community and a global economy; and
  - Incorporate on an ongoing basis activities within professional development that prepare and assist all employees to work effectively with diverse learners.

Chapter 72.4(6) Media Services

- The AEA shall deliver media services that:
  - Align with school and school district needs;
  - Support effective instruction;
  - Provide consultation, research and information services, instructional resources, and materials preparation and dissemination to assist schools and school districts to meet the learning needs of all students and support local district media services;
  - Support the implementation of content standards in, but not limited to, reading, mathematics, and science; and
  - Support and integrate emerging technology.

Chapter 72.4(7) School Technology

- The AEA shall supplement and support effective instruction for all students through school technology services by providing:
  - Technology planning;
  - Technical assistance; and
  - Professional development.
- School Technology Services will support:
  - Incorporation of instructional technologies to improve student achievement; and
  - Implementation of content standards in, but not limited to, reading, mathematics, and science.
- School Technology Services shall support and integrate emerging technology.

Chapter 72.4(8) Leadership

- The AEA shall deliver services tha develop leadership based upon the Iowa Standards for School Administrators as adopted by the Board of Educational Examiners.
- AEA Leadership services assist with:
  - Recruitment;
  - Induction;
  - Retention; and
  - Professional development of educational leaders.
- AEAs develop and deliver leadership programs based on:
  - Local educational needs;
  - State educational needs; and
  - Best practices.

Chapter 72.4(9) Management Services - Optional

- The AEA shall deliver management services if requested.
- If the AEA provides management services to school districts, the services shall conform to the provisions of Iowa Code section 273.7A.

AEA 267
AREA EDUCATION AGENCY
leadership in learning

21 5 Sec. 40. Section 284.13, subsection 1, paragraph f,
21 6 subparagraphs (1), (2), and (3), Code 2007, are amended to
21 7 read as follows:
21 8 (1) (a) For ~~the~~ each fiscal year of the fiscal period
21 9 beginning July 1, 2006, and ending June 30, ~~2007~~ 2008, the sum
21 10 of three million three hundred ninety thousand dollars.
21 11 (b) Of the amount allocated under subparagraph subdivision
21 12 (a), for the fiscal year beginning July 1, 2007, and ending
21 13 June 30, 2008, not less than one million dollars shall be used
21 14 by the department to assist school districts to recruit,
21 15 employ, and retain qualified teacher librarians, guidance
21 16 counselors, and school nurses and to meet the goals
21 17 established in section 256.11, subsections 9A and 9B. To be
21 18 eligible for assistance, a school district shall submit an
21 19 application to the department by September 1, 2007. The
21 20 department shall distribute assistance under this subparagraph
21 21 subdivision by November 1, 2007. Moneys received by a school
21 22 district pursuant to this subparagraph subdivision shall be
21 23 used only to comply with section 256.11, subsection 9, 9A, or
21 24 9B.
21 25 (2) For the fiscal year beginning July 1, ~~2007~~ 2008, and
21 26 ending June 30, ~~2008~~ 2009, the sum of seven million five
21 27 hundred thousand dollars.
21 28 (3) For the fiscal year beginning July 1, ~~2008~~ 2009, and
21 29 ending June 30, ~~2009~~ 2010, the sum of ~~ten~~ six million six
21 30 hundred ten thousand dollars.
21 31 Sec. 41. Section 284.13, subsection 1, paragraph g,
21 32 unnumbered paragraph 1, Code 2007, is amended to read as
21 33 follows:
21 34 For purposes of the pay=for=performance ~~program~~ and career
21 35 ladder pilots established pursuant to ~~section 284.14~~ sections
22 1 284.14 and 284.14A, the following amounts are allocated to the
22 2 department of ~~management~~ education for the following fiscal
22 3 years:
22 4 Sec. 42. Section 284.13, subsection 1, paragraph g,
22 5 subparagraphs (2) and (3), Code 2007, are amended to read as
22 6 follows:
22 7 (2) For the fiscal year beginning July 1, 2007, and ending
22 8 June 30, 2008, the sum of ~~two~~ one million ~~five hundred~~
~~22 9 thousand~~ dollars. From the amount allocated under this
22 10 subparagraph, an amount up to ten thousand dollars shall be
22 11 used for purposes of the pay=for=performance commission's
22 12 expenses, an amount up to one hundred thousand dollars shall
22 13 be used by the department for oversight and administration of
22 14 the planning pilots as provided in sections 284.14 and
22 15 284.14A, and an amount up to two hundred thousand dollars
22 16 shall be used for the employment of an external evaluator.
22 17 (3) For the fiscal year beginning July 1, 2008, and ending
22 18 June 30, 2009, the sum of ~~five~~ two million five hundred
22 19 thousand dollars. From the amount allocated for the fiscal
22 20 year under this subparagraph, an amount up to ten thousand
22 21 dollars shall be used for purposes of the pay=for=performance
22 22 commission's expenses, an amount up to one hundred thousand

22 23 dollars shall be used by the department for oversight and
22 24 administration of the implementation pilots as provided in
22 25 sections 284.14 and 284.14A, and an amount up to two hundred
22 26 thousand dollars shall be used for the employment of an
22 27 external evaluator.
22 28 Sec. 43. Section 284.13, subsection 1, paragraph h,
22 29 unnumbered paragraph 1, Code 2007, is amended to read as
22 30 follows:
22 31 For each fiscal year in which funds are appropriated for
22 32 purposes of this chapter, the moneys remaining after
22 33 distribution as provided in paragraphs "a" through "g" shall
22 34 be allocated to school districts for salaries ~~and career~~
~~22 35 development~~ in accordance with the following formula:
23 1 Sec. 44. Section 284.13, subsection 1, paragraph i, Code
23 2 2007, is amended to read as follows:
23 3 i. From moneys available under paragraph "h", the
23 4 department shall allocate to area education agencies an amount
23 5 per ~~classroom~~ teacher employed by an area education agency
23 6 that is approximately equivalent to the average per teacher
23 7 amount allocated to the districts. The average per teacher
23 8 amount shall be calculated by dividing the total number of
23 9 ~~classroom~~ teachers employed by school districts and the
23 10 ~~classroom~~ teachers employed by area education agencies into
23 11 the total amount of moneys available under paragraph "h".
23 12 Sec. 45. Section 284.13, subsection 1, paragraph j, Code
23 13 2007, is amended to read as follows:
23 14 j. Notwithstanding section 8.33, any moneys remaining
23 15 unencumbered or unobligated from the moneys allocated for
23 16 purposes of paragraph "a", "b", ~~or~~ "c", or "g" shall not
23 17 revert but shall remain available in the succeeding fiscal
23 18 year for expenditure for the purposes designated. The
23 19 provisions of section 8.39 shall not apply to the funds
23 20 appropriated pursuant to this subsection.
23 21 Sec. 46. Section 284.14, Code 2007, is amended by adding
23 22 the following new subsection:
23 23 NEW SUBSECTION. 0A. INTENT. The intent of this section
23 24 is to create a process by which select Iowa school districts
23 25 research, develop, and implement projects designed to identify
23 26 promising practices related to enhanced teacher compensation
23 27 career ladders and performance pay models.
23 28 Sec. 47. Section 284.14, subsections 1, 2, and 3, Code
23 29 2007, are amended to read as follows:
23 30 1. COMMISSION. A pay=for=performance commission is
23 31 established to design and implement a pay=for=performance
23 32 ~~program~~ pilot project and provide a study relating to teacher
23 33 and staff compensation containing a pay=for=performance
23 34 component. The study shall measure the cost and effectiveness
23 35 in raising student achievement of a compensation system that
24 1 provides financial incentives based on student performance.
24 2 The commission is part of the executive branch of government.
24 3 2. DEVELOPMENT OF PROGRAM. Beginning July 1, 2006, the
24 4 commission shall gather sufficient information to identify a
24 5 pay=for=performance program based upon student achievement
24 6 gains and global content standards where student achievement
24 7 gains cannot be easily measured. The commission shall review
24 8 pay=for=performance programs in both the public and private
24 9 sector. ~~Based on this information, the commission shall~~

~~24 10 design a program utilizing both individual and group incentive~~
~~24 11 components. At least half of any available funding identified~~
~~24 12 by the commission shall be designated for individual~~
~~24 13 incentives.~~
24 14 a. Commencing with the school year beginning July 1, 2007,
24 15 the commission shall initiate ~~demonstration projects~~ planning
24 16 pilots, in selected kindergarten through grade twelve schools,
24 17 to test the effectiveness of the pay=for=performance program.
24 18 The purpose of the ~~demonstration projects~~ planning pilots is
24 19 to identify the strengths and weaknesses of ~~the~~ various
24 20 pay=for=performance program design, evaluate cost
24 21 effectiveness, analyze student achievement ~~gains~~ needs, select
24 22 formative and summative student achievement measures that
24 23 align to identify needs, consider necessary supports related
24 24 to the student achievement goals in the school district's
24 25 comprehensive school improvement plan, ~~test assessments~~ review
24 26 assessment needs, identify mechanisms to account for existing
24 27 teacher contract provisions within the proposed career ladder
24 28 salary increments, allow thorough review of data, and make
24 29 necessary adjustments before ~~implementing~~ proposing
24 30 implementation of the pay=for=performance program statewide.
24 31 b. ~~The~~ Commencing with the school year beginning July 1,
24 32 2007, the commission shall select ~~ten~~ two school districts as
24 33 ~~demonstration projects~~ planning pilots. ~~To the extent~~
~~24 34 practicable, participants shall represent geographically~~
~~24 35 distinct rural, urban, and suburban areas of the state.~~
25 1 Participants shall provide reports or other information as
25 2 required by the commission.
25 3 c. Commencing with the school year beginning July 1, 2008,
25 4 the commission shall ~~select twenty additional~~ administer two
25 5 implementation pilots in the school districts ~~as demonstration~~
~~25 6 projects~~ selected for planning pilots under paragraph "b".
25 7 3. REPORTS AND FINAL STUDY. Based on the information
25 8 generated by the ~~demonstration projects~~ planning and
25 9 implementation pilots, the commission shall prepare an interim
25 10 report by January ~~15~~ 14, ~~2007~~ 2008, followed by interim
25 11 progress reports annually, followed by a final study report
25 12 analyzing the effectiveness of pay=for=performance in raising
25 13 student achievement levels. The final study report shall be
25 14 completed no later than six months after the completion of the
25 15 ~~demonstration projects~~ planning and implementation pilots.
25 16 The commission shall provide copies of the final study report
25 17 to the department of education and to the ~~chairpersons and~~
~~25 18 ranking members of the senate and house standing committees on~~
~~25 19 education~~ general assembly.
25 20 Sec. 48. Section 284.14, subsection 4, Code 2007, is
25 21 amended by striking the subsection.
25 22 Sec. 49. NEW SECTION. 284.14A CAREER LADDER PILOTS.
25 23 1. INTENT. The intent of this section is to create a
25 24 process by which select Iowa school districts research,
25 25 develop, and implement pilots designed to identify promising
25 26 practices related to enhanced teacher compensation career
25 27 ladder models.
25 28 2. PILOT ESTABLISHED. A career ladder pilot is
25 29 established to be designed, implemented, and administered by
25 30 the department. The department shall gather sufficient
25 31 information to identify a career ladder pilot.

25 32 a. For the school year beginning July 1, 2007, and ending
25 33 June 30, 2008, the department shall select up to eight school
25 34 districts as planning pilots. Participants shall provide
25 35 reports or other information as required by the department.
26 1 b. For the school year beginning July 1, 2008, and ending
26 2 June 30, 2009, the department shall administer up to eight
26 3 implementation pilots in the school districts selected for
26 4 planning pilots under paragraph "a".
26 5 3. INTERIM AND FINAL REPORTS. Based on the information
26 6 generated by the planning and implementation pilots, the
26 7 department shall submit an interim report to the general
26 8 assembly by January 14 annually, and shall submit a final
26 9 report summarizing the effectiveness of the pilots in raising
26 10 student achievement levels to the general assembly no later
26 11 than six months after the completion of the planning and
26 12 implementation pilots. Upon completion of the career ladder
26 13 planning and implementation pilots, subject to the sufficiency
26 14 of funds, the state board of education shall adopt rules
26 15 requiring implementation of the successful components of the
26 16 pilots by school districts statewide.

State of Iowa

Executive Department

IN THE NAME AND BY THE AUTHORITY OF THE STATE OF IOWA

EXECUTIVE ORDER NUMBER FORTY-EIGHT

WHEREAS, HF 2792 signed into law on June 1, 2006, calls for the establishment of a commission within the executive branch of state government to design a pay-for-performance program and provide a study relating to teacher and staff compensation containing a pay-for-performance component; and

WHEREAS, the General Assembly created the Institute for Tomorrow's Workforce ("ITW") last year to provide a long-term forum for bold, innovative recommendations to improve Iowa's education system to meet the workforce needs of Iowa's new economy; and

WHEREAS, ITW is tasked with reviewing the state's education accountability measures and identifying effective education structure and delivery models that promote optimum student achievement; and

WHEREAS, ITW recommended that Iowa increase teacher salaries and complete the state's commitment to a bold new professional teacher performance and compensation model that rewards educators for their own knowledge, skills and practices that prepare students for the 21st century; and

WHEREAS, the membership of ITW is broad-based and reflects the awareness that meaningful and lasting educational change requires sustained support and collaboration from leaders in business, industry, government and education.

NOW, THEREFORE, I, Thomas J. Vilsack, Governor of the State of Iowa, by the power vested in me by the laws and the Constitution of the State of Iowa, do hereby order and direct the Institute for Tomorrow's Workforce to propose a design for a pay-for-performance program and conduct a study of the design as set forth in Section 27 of HF 2792 as enacted. The study shall measure the cost and effectiveness in raising student achievement of a compensation system that provides financial incentives based on student performance.

The Iowa Department of Education shall provide technical and administrative assistance to ITW. In developing the design, ITW shall seek input from and consult with individuals including but not limited to the following individuals outside of the Institute's membership:

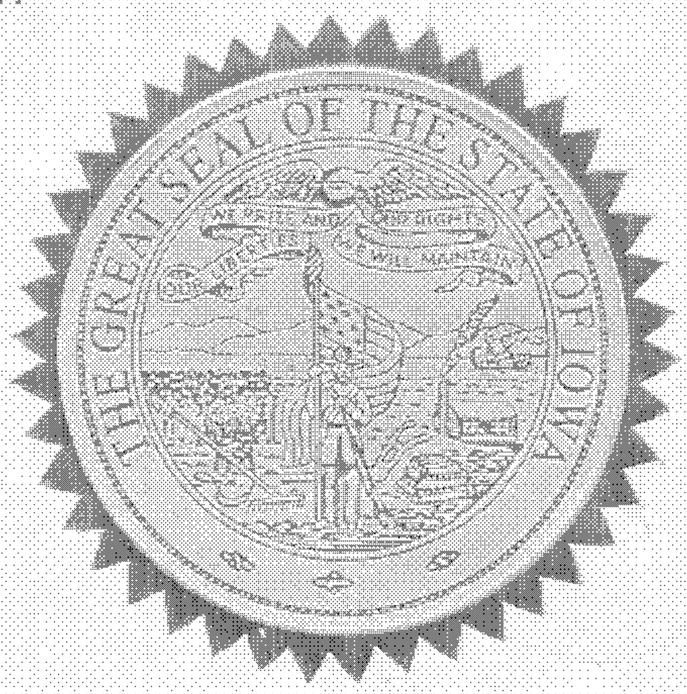
(1) At least one classroom teacher from each level: elementary, middle school, and high school;

(2) At least one local school board official;

(3) At least one K-6 principal and one 7-12 principal;

(4) A representative from the Iowa State Education Association, Iowa Association of School Boards, School Administrators of Iowa, Professional Educators of Iowa, and the Urban Education Network.

Nothing in this executive order shall be construed to contravene any applicable state or federal law.



IN TESTIMONY WHEREOF, I have hereunto subscribed my name and caused the Great Seal of Iowa to be affixed. Done at Des Moines this 1st day of June, in the year of our Lord two thousand six.

THOMAS J. VILSACK
GOVERNOR

ATTEST:

CHESTER J. CULVER
SECRETARY OF STATE

Iowa Statewide Initiatives

The following summaries of current statewide initiatives give context for the Race to the Top application. References in the narrative section refer to several of these initiatives.

Adolescent Literacy

Adolescent Literacy Research and Development Team (ALRDT) engages in group-investigation inquiry into adolescent literacy and the development of professional development materials. The first series of materials being developed are: an Introduction to Adolescent Literacy which includes Inquiry, Access to Print, Reading Volume, and Content Area Read Alouds. The next series of materials to be developed will be Explicit Instruction in the areas of Vocabulary and Comprehension. The third series to be developed will be in the area of writing. The work of this team is supported by additional professional development in the area of formative assessment, Concept Oriented Reading Instruction (CORI), Question-Answer Relationships (QAR), Every Child Reads (ECR), Second Chance Reading (SCR), and Authentic Intellectual Work (AIW).

Authentic Intellectual Work (AIW)

Within the standards for AIW, special emphasis is placed on cognitive complexity, or teaching for understanding. Formative assessments are used to determine the progress of students toward deeper levels of understanding. "Research on authentic intellectual work throughout the United States indicated that in grades 3 – 12, across the subjects of mathematics, social studies, language arts, science, and regardless of race, gender, or social class, students who experienced higher levels of instruction and assessment that promoted authentic intellectual work showed higher achievement than students who experienced lower levels of instruction and assessment

aimed toward authentic intellectual work." Newmann, Fred M., Bruce King, and Dana Carmichael. Authentic Instruction and Assessment. Prepared for the Iowa Department of Education, 2007.

Concept Oriented Reading Instruction (CORI)

The CORI Teacher Development Academy is targeted for upper elementary and middle school teams to engage in a research-based classroom instructional model emphasizing reading engagement, reading comprehension, and conceptual learning in science (or other content areas) in order to improve reading achievement. In using the strategies of CORI, teachers are engaged in on-going formative assessment of students. The model emphasizes the three critical criteria for authentic intellectual work, construction of knowledge, disciplined inquiry, and value of achievement beyond school.

Cognitively Guided Instruction (CGI)

CGI provides a framework for assessing students' thinking. CGI teachers use formative assessments and learn how to use what their children currently understand to plan instructional activities for these students. CGI incorporates the three critical criteria for authentic intellectual work, construction of knowledge, disciplined inquiry, and value of achievement beyond school.

EdInsight Data Warehouse Project

The Iowa Department of Education (IDE) developed a statewide longitudinal data system in order to provide a common repository of educational information built for education stakeholders. Historical data has been loaded from the 2004-2005 School Year to the present for multiple data sets: Project Easier (Student data collection including enrollment and curriculum), IMS (Special Education), Iowa Testing Programs (ITP) data, and Teacher Data. EdInsight

release 1.0 contains a series of reports that synergizes the value of these data sets and directly empowers Iowa Educators through data.

To accurately gather initial requirements for the project, the IDE conducted 20 external focus groups across the state to interview users from a variety of levels. To extend the reach of the focus groups, an online survey was conducted to gather feedback from over 400 users across the state. In addition to the Project Team, EdInsight has engaged an Advisory Board, Data Governance and Steering Committees to shape, define and direct the project.

This schematic provides a high level overview of EdInsight. Data sets are loaded into the backend warehouse. The front end portal provides user access to a suite of tools. EdInsight 1.0 provides access to reports and education analytics built on a business intelligence platform.

The following table defines the content of the pre-formatted reports and the OLAP cube provided in the release.

Report Family	**Report Name**	**Report Purpose**
Assessment	Individual Performance Detail	How has the student performed in each of the ITBS / ITED areas 2004-2005 School Year to current? What is a student's proficiency?
	Cohort Reports	How have Cohorts performed on ITBS/ITED Assessments (Simple, Matched and Cross Sectional) over time?
	Assessment Cube	Direct OLAP access for Ad-Hoc type data requests, an Assessment based data cube for analysis.
Annual Progress Report	Student Achievement	Each year a school or school district is required to submit an annual progress report to the local community, AEA, and IA Department of Education. This report provides the student achievement information of that report. This report

Report Family	Report Name	Report Purpose
		displays the percentage and counts of students, disaggregated, by achievement level.
Curriculum	Curriculum Accreditation Report	This report displays the number of Carnegie Units that are offered and taught in a building and allows for comparison with the State, AEA, or enrollment category. Users are able to drill through and view details about the courses that the building is offering in each accreditation area
	Student Course History Report	This report displays all the courses that are offered and taught in the referenced building, grouped by NCES course name. Carnegie Units and student enrollments are subtotaled by NCES course name and displayed as totals for accreditation.
Special Education	Suspensions and Expulsions	The purpose of this report is to measure state and district progress toward meeting targets for the suspension and expulsion of students with IEPs.
Utilities	School and District Comparison	The reports in this area will permit the user to find comparable schools or districts in terms of size (enrollment), and/or demographics

The IDE has made a substantial investment in EdInsight and has a multi-phase, multi-year plan for continued development. Additional data sets will be added such as district financial chart of accounts, additional student assessments, post-secondary data and a linkage to workforce.

Enhanced Assessment Grant (EAG) – Formative Assessment

The EAG—Formative Assessment is a high school pilot project in collaboration with the Council of Chief State School Officers (CCSSO) and high schools in nine other states. Its focus is on formative assessment as part of a balanced assessment system with emphasis on enhancing student motivation to learn. Participants gain insight into better using formative assessment data to guide instructional decisions as well as developing valid and reliable formative and summative classroom assessments.

Every Child Reads (ECR)

ECR is a K -12 program designed to provide research-based content and the facilitation needed for improving instruction in order to accelerate the achievement of all students. The initiative provides teachers with professional development in the five components of reading, reading strategies, using data to drive instructional decisions, and the use of classroom-based assessments for frequent, ongoing monitoring of student progress.

Every Learner Inquires (ELI)

The mission of the ELI project is to assist Iowa's AEAs, schools, and districts in building the capacity to implement an effective K-12 science education program using inquiry-based instructional strategies as outlined in the National Science Education Standards. Integrated into the learning model is emphasis on construction of student knowledge, disciplined inquiry – use of prior knowledge, in-depth understanding, and elaborated communication of knowledge, – and meaning beyond the success in school. One goal of the ELI project is to assist leadership teams in better assessing students' science learning using formative and summative assessments.

Every Student Counts (ESC)

The ESC initiative states clearly that teaching for understanding emphasizes problem-based instructional tasks and meaningful distributed practice with emphasis on the three criteria critical to significant intellectual accomplishment – construction of knowledge, disciplined inquiry, and the value of achievement beyond school. ESC provides professional development to mathematics educators in formative assessment strategies and how to base instructional decisions on student understanding.

Instructional Decision Making (IDM)

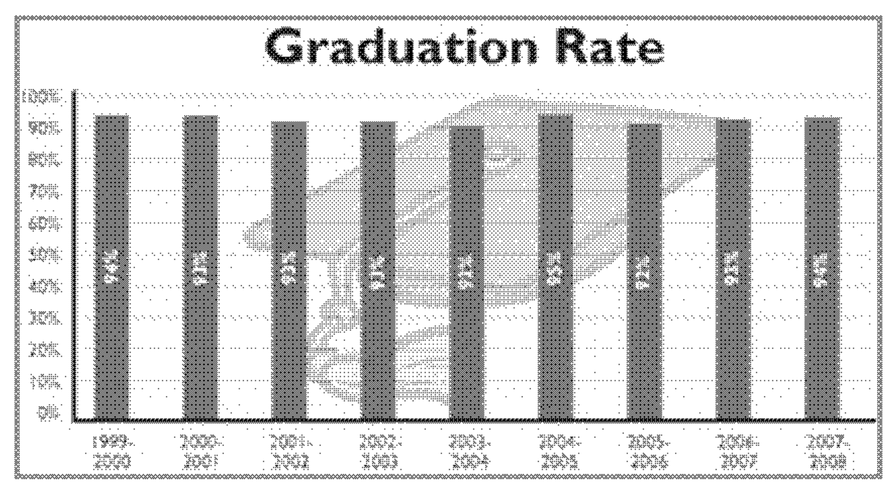
The IDM process begins with all students having access to a guaranteed and viable curriculum provided by the school through the core instructional program. Formative, summative, and diagnostic assessment data are gathered on a regular basis and each student's response to instruction is evaluated. Students who exceed or are not meeting the standards of the core instructional program are provided supplemental and/or intensive instruction. Performance is monitored and student's flow from one cycle of instruction to another as indicated by the data. In this system, all students receive instruction to address their unique learning needs.

I-JAG (Iowa Jobs for America's Graduates)

One program in Iowa high schools is successfully graduating students and preparing them to enter the workforce. We're iJAG – Iowa Jobs for America's Graduates – and we're one of the most cost-effective dropout prevention and school-to-career solutions in Iowa.

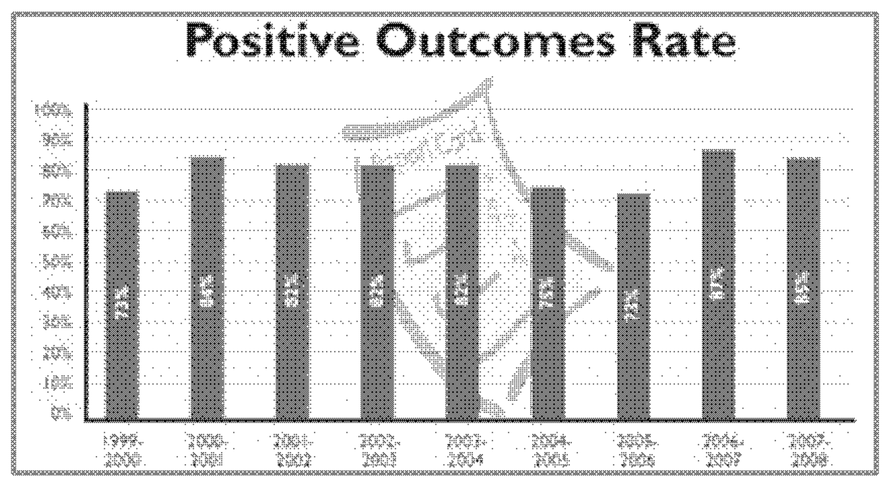
Students in the iJAG program have trouble making it in a conventional classroom because of the distractions and barriers at home, outside the classroom or even inside the classroom. Relying on real-world, project-based instructional methods and an unconventional approach to personal connections with students, the iJAG teaching specialists work within conventional learning environments to help remove barriers and show students how to achieve the next step of their career or education.

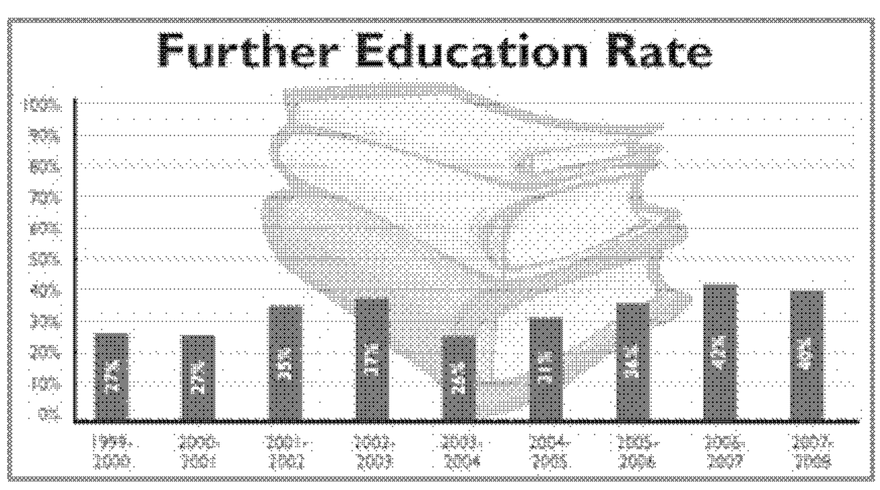
iJAG benefits Iowa by increasing high school graduation rates, preparing high school students to enter the workforce, preparing youth to become productive members of our community decreasing juvenile crime and delinquency, and by increasing the number of

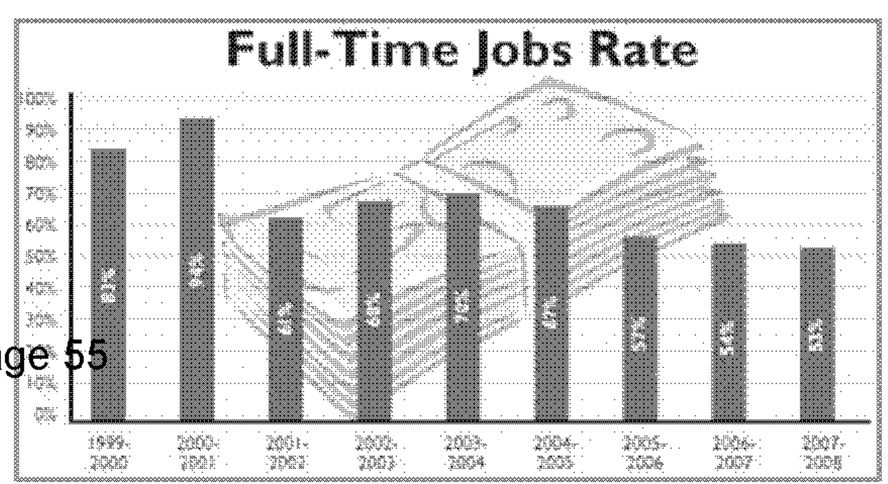


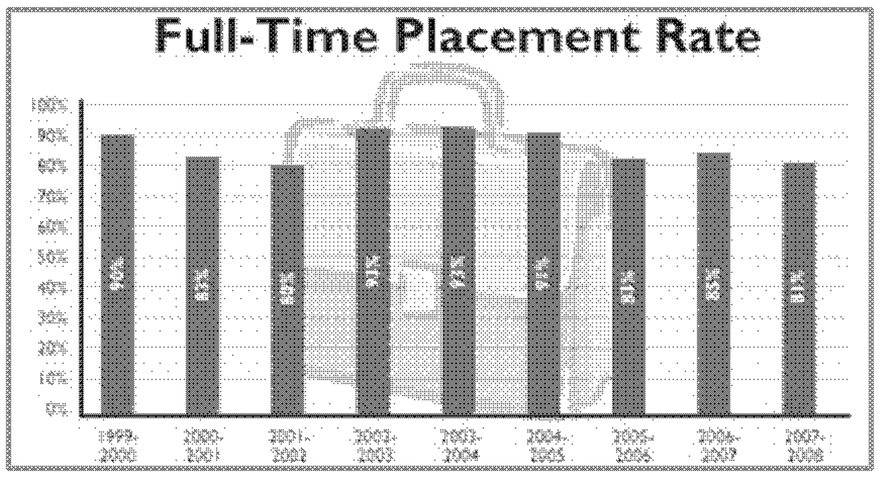
people working and contributing to society. iJAG students develop character and improve performance needed to realize one's potential for excellence in school, the workplace, as well as continuous self-development. iJAG graduates who are employed full time repay the cost of their participation within 14 months after graduation through payroll or sales taxes. Additionally, iJAG students across Iowa annually contribute more than 9,000 hours in community service.

The success of the program is reflected in iJAG's documented, measurable performance outcomes. iJAG education specialists collect information on each student and activity at the local level, allowing iJAG to document outcomes. iJAG vigilantly tracks and responds to the outcomes of our programs, always keeping students at the center of the educational process. Ultimately, our students achieve a better success rate than the overall student population of Iowa. We collect and analyze data through the JAG Electronic National Data Management System (e-NDMS). Program performance standards are monitored by the Center for Labor Market Studies at Northeastern University and JAG program. This system contains data on JAG students across the nation and obtains information upon intake, during participation in the iJAG program, and for one year post graduation.









Iowa Arts Educators Mentor Program – Model of Excellence

The purpose of this program is to continue to improve the quality of arts education in Iowa through mentoring assistance of first-year arts teachers. Increased opportunities for success have and will benefit these teachers, the students in their classrooms, the local school district, and the state. One of the most important traits of leadership is to create an environment in which quality can flourish, and this grant program will continue to foster and sustain this environment for our beginning teachers.

The Iowa Arts Educators Mentor Program is designed to enhance, not supplant the established local/district/AEA/State mentoring programs. The mentoring program is discipline-specific. The information that is made available to the first-year teacher through this program ranges from "survival" to "mastery" skills needed to be successful in the arts classroom. The information is tailored specifically to the individual teacher and teaching situation. This information can also be accessed immediately (through emails/phone calls) or after observation and reflection (mentor visits). It also provides for networking with other first-year and veteran teachers throughout the state.

Due to the statewide scope of this project, the Iowa Alliance for Arts Education continues to be uniquely positioned to manage this project. All of the participating arts organizations are members of the IAAE "umbrella." The leadership of the six arts organizations (Arts Educators of Iowa, Iowa Bandmasters Association, Iowa Communications Association, Iowa Choral Directors

Association, Iowa Music Educators Association, and Iowa String Teachers Association), as well as Music Mentors of Iowa, participates in IAAE programs and has representatives on the IAAE Advisory Board. IAAE, collaborating with the Iowa Department of Education, has been a leader in the development of statewide arts programs in the areas of assessment, standards and benchmarks, integration, advocacy, and leadership development.

The mentoring project is a natural outgrowth of the IAAE mission statement, which is to "increase the support of policies, practices, and partnerships that ensure quality arts education for all Iowans." Goals of the mentoring project continue to be:

- To build a collaborative community environment between our professional organizations.
- To retain promising beginning arts teachers.
- To promote the personal and professional well-being of beginning arts teachers.
- To improve arts teaching performance by supporting continuous professional growth for both mentor and mentee.

Iowa Core

The Iowa Core (also known as the Iowa Core Curriculum) is a statewide effort to improve teaching and learning to ensure that all Iowa students engage in a rigorous and relevant curriculum. It defines a core curriculum for all Iowa students Signed into law in spring 2008, the Iowa Core establishes high expectations not only for students, but for teachers and school leaders in all of Iowa's accredited nonpublic and public schools.

Implementation of the Iowa Core will require teachers to examine their content and instructional practices and to collaborate and improve together to energize and invigorate Iowa's students to construction knowledge through deep conceptual and procedural learning focused on a well-researched set of essential concepts and skills in literacy, math, science, social studies, and

21st century learning skills (civic literacy, financial literacy, technology literacy, health literacy, and employability skills).

The Iowa Core builds on our state's long history of community leadership in education and relies on partners across the state for implementation in high schools by 2012 and in elementary and middle schools by 2014.

Successful implementation of the Iowa Core relies upon the support of three very important sets of supports:

- Community

  The Iowa Core galvanizes action to improve teaching and learning by encouraging communities, parents, and educators to strive to improve student academic achievement. The community must be fully informed and actively engaged in the process. Multiple partners including business and industry, families, and communities work interdependently to improve learning in schools across the state.

- Schools

  Schools and supporting agencies function as an integrated system and provide a coordinated approach, consistent communication, and differentiated delivery. All school systems, processes and initiatives are important in supporting the work of teaching and learning.

- Leadership

  Committed leadership actions are focused and provide the expertise, guidance, and resources needed to support teaching and learning. Leaders have an unrelenting focus on improving instructional practices and creating a sustainable system of instruction that develops conceptual learning for all students, cultivating leadership and delegating responsibility.

Major areas of work include the following:

- Content

  Districts and schools will be asked to review their local enacted curriculum (the curriculum delivered to students) compared to the intended curriculum (the essential concepts and skills of the Iowa Core Curriculum). Educators will locate gaps and take action to restructure their current program to fully embrace the Iowa Core Curriculum.

- Instruction

  The focus on instruction will be to implement instructional practices that support these characteristics of effective instruction: teaching for understanding, rigor and relevance, student-centered learning, and teaching for **learner** differences. Educators will become members of professional learning communities focused on improving instructional practices.

- Assessment

  Iowa plans to continue with its state assessment, which is currently being reviewed and improved to align more closely with the Iowa Core Curriculum. The state is also working on proving a writing assessment to schools and voluntary end-of-course assessments are already available in mathematics and science. We are working to enhance assessment for learning (formative assessment) practices across the state through providing professional development experiences designed to improve practices of educators across the state.

The Iowa High School Project

Jointly supported by the Iowa Department of Education and the International Center for the Leadership in Education (ICLE), the Iowa High School Project has been a unique opportunity for Iowa schools to access support to assist in reform efforts. Fifty-seven high schools voluntarily applied to participate in a three-year support process over the past five years. Participants focus on growing their respective improvement and reform efforts with a concentration on struggling learners within the rigor and relevance framework. Participant schools in the Iowa High School Project are representative of our state, including urban, suburban, small town, and rural sites.

Participating schools demonstrate sound initial efforts and the potential to substantially expand and grow positive reform to all learners in their respective settings. Supports to selected schools included, but were not limited to the following: membership in the Successful Practices Network (SPN), web- based supports, national consultation assistance, print and on-line resources, regional trainings, team attendance at a Model Schools Conference, participation in ICLE research efforts, and ongoing customized supports to meet the unique needs of the

individual building sites.

Iowa Youth Development Collaboration Project

The Iowa Youth Development Collaboration Project builds on the State's existing youth development initiatives to produce broad, positive change in youth-serving systems. The project's goals are to replace fragmented and deficit-driven youth policies and programs at the State level with a coordinated youth development approach, and then to build the capacity of local communities to use a positive youth development approach in providing youth services. Eight state agencies, along with Iowa State University and several community-based programs, are involved in the initiative.

The project is working to ensure that all Iowa youth have the opportunity to be successful in school, in a career, and in life. The framework for the project targets four results for Iowa youth: (i) safe and supportive families, schools and communities; (ii) healthy and socially competent; (iii) successful in school; (iv) prepared for a productive adulthood.

Journey to Excellence Model

Journey to Excellence is a mentoring and induction model developed by Iowa educators for Iowa beginning educators. It uses a series of learning projects for mentors to use with beginning educators. It serves as the curriculum for mentors and beginning educators. The program uses Mentoring Matters: A Practical Guide to Learning-Focused Conversations for the skill set needed by mentors.

Learning Projects are organized around a process adapted from Dr. W. Edwards Deming used by the Iowa Department of Education as the formative process of Iowa Learning Initiatives. They include the following steps.

Cycle	Action
Assessing Needs	The mentor and beginning educator review the learning project. They also review the assigned Iowa Teaching Standard and the criteria by reviewing the appropriate pages in the ***ITS Framework***. As a result of this review, the beginning educator in consultation with her/his mentor selects one criterion for the focus of this learning project. The beginning educator highlights appropriate levels of performance for that criterion in the Framework book.
Planning	Using a **Learning-Focused Growth Plan**, the mentor will engage the beginning educator in a planning learning-focused conversation. As a result of the conversation, a plan will be created that includes (1) the focus for growth, (2) how the beginning educator will fill the knowledge gap, (3) implementation steps, (4) assessment/data collection, and (5) assistance options.
Implementing	The beginning educator will carry-out the plan, practicing the teaching aspects and consult with the mentor as needed. The beginning educator will use the **Learning-Focused Growth Plan: Tracking Progress** sheet to capture new learnings and questions.
Evaluating	The beginning educator will have an opportunity to reflect on the learning project. One method will be a set of reflective questions based on the ORID method of questioning. The mentor will then engage the beginning educator in a reflective, learning-focused conversation. The conversation will include determining the degree to which the goal was achieved. They will return to the original criterion page in the ***ITS Framework***. The beginning educator will highlight appropriate levels of performance for that criterion in the Framework book. In the event the beginning educator wishes to learn more about the standard or a criterion, the learning project may be repeated.

Each learning project includes these four sections of the cycle. For some learning projects, the actions may be different than those listed above

Mentoring and Induction Program

In 2001, the Iowa legislature required that districts' mentoring and induction plans provide a two-year sequence of induction program content and activities to support the Iowa teaching standards and beginning teacher professional and personal needs; mentor training that

includes, at a minimum, skills of classroom demonstration and coaching and district expectations for beginning teacher competence of Iowa teaching standards; placement of mentors and beginning teachers; the process for dissolving mentor and beginning teacher partnerships; district organizational support for release time for mentors and beginning teachers to plan, provide demonstration of classroom practices, observe teaching, and provide feedback; structure for mentor selection and assignment of mentors to beginning teachers; a district facilitator; and program evaluation. Iowa is an example of one of the states currently funding districts' mentoring and induction programs for teachers. The 2001 Student Achievement and Teacher Quality Act requires each participating school district and area education agency (AEA) to develop an initial beginning teacher mentoring and induction program to promote excellence in teaching, enhance student achievement, build a supportive environment within school districts and AEAs, increase the retention of promising beginning teachers, and promote the personal and professional well-being of classroom teachers.

Our Kids

Our Kids is a professional development program for teachers of English language learners. The program provides teachers with the opportunity to learn strategies, including formative assessments, to effectively help students learn both English and content in the classroom.

Picture Word Inductive Model (PWIM)

The picture word inductive model is an inquiry-oriented language arts strategy that employs photographs containing familiar objects, actions, and scenes to elicit words in children's listening and speaking vocabulary. PWIM requires continuous modeling of reading and writing by the teacher and can also be used to teach students how to use observation and analysis in their

study of reading and writing, as well as in comprehending and composing. The Department of Education is working with Area Education Agencies to deliver training in this initiative.

Question Answer Relationships (QAR)

The QAR Teacher Development Academy is targeted for middle school and high school teams to engage in a research-based instructional strategy that provides a framework for making explicit the invisible processes underlying reading comprehension in order to improve reading achievement for all students. It includes making the learning targets visible for students and using student work to diagnose student strengths and weaknesses in order to inform instructional decisions. Emphasis is placed on construction of student knowledge and the involvement of disciplined inquiry.

Reducing the Achievement Gap Grant

Established in 2003, the Reducing the Achievement Gap Grant program is a competitive process to support and encourage the use of research-based strategies that improve academic achievement and narrow the achievement grant. The program supports public school districts in areas such as assigning highly skilled teacher to high-need students and highly skilled administrators to high-need schools; maintaining a commitment to cultural competency training; supporting professional development; and creating partnerships between schools, families, businesses, and communities.

Second Chance Reading (SCR)

SCR is a program that provides a specific course for struggling readers at the middle and high school levels. SCR provides students with strategies for reading and a process to monitor their own achievement toward specific learning goals.

Statewide Reading Team

The Iowa Department of Education, in collaboration with area education agencies, has established the Statewide Reading Team (SWRT) and AEA reading teams to support the Every Child Reads K -12 effort. The SWRT and AEA reading teams are designed to accomplish the following:

- Build individual and collective knowledge, skills, and strategies in the area of reading and reading instruction K-12 across Iowa's education system including DE , AEAs, and LEAs in teaching reading to those students who are experiencing difficulty across Iowa's educational system including DE, AEAs, and LEAs
- Build individual and collective knowledge about structured school improvement components necessary to improve achievement in an academic area of specific reading strategies and models
- Emphasize the application of the Every Child Reads: Excellence in Teaching and Learning strategies and models across subject areas

Teacher Development Academies

Teacher Development Academies are a series of professional development opportunities available to teams from public schools. Each Academy features research based content and is designed to support local school districts and AEAs in offering professional development that is grounded in research and based on the Iowa Professional Development Model.

The target audience for the Academies is local school teams that include the teachers, principals, and central office personnel from Iowa's school districts and AEA consultants who participate with a specific school team. The purposes of the Academies are:

- To increase student achievement through quality professional development.
- To improve local district access to qualified trainers in high demand content areas (Reading, Mathematics and Science).

- To increase the number of teachers and consultants with expertise in specific academic content areas and skills in delivering professional development opportunities.
- To support and compliment existing Teacher Quality Program efforts. This initiative is designed to support the AEA and DE capacity building efforts by adding to the pool of available trainers in Iowa.
- To support LEA implementation of District Professional Development Plan.

The objectives are:

- Participants acquire knowledge and skills in instructional strategies that are supported by scientifically based research.
- Participants practice strategies in the classroom, collect data on student results, and study their own implementation.
- Participants attend all training sessions. Training usually begins in the summer and is distributed through the school year (either 4 or 5 days during the summer, 3 follow-up dates during the school year, and intermittent ICN sessions).

The content offered in the academies is selected to assist local districts in providing training to implement District Professional Development Plan. The content is determined by analyzing statewide student achievement data and District Professional Development Plan across the state.

The benefits to participants include:

- Participants are learning new skills and refining existing skills that will improve their practice as teachers, consultants, and teacher-trainers.
- Participants are collaborating with other educators locally and across the state.
- Participants received a stipend for their engagement in the training.
- Training materials and assessment instruments were provided at no cost to schools.
- Teachers have the option of receiving renewal or graduate credit and the opportunity to earn credit for additional endorsements.

The Strategic Instruction Model (SIM)

SIM was developed by researchers and teachers at the University of Kansas Center for Research on Learning (KU-CRL), is an approach to teaching adolescents who struggle with becoming good readers, writers, and learners. It is based on the reality that for adolescents to meet high standards, they must be able to read and understand large volumes of complex, difficult reading materials. Additionally, they must acquire the skills to express themselves effectively in writing content areas The Iowa Department of Education works with AEAs to deliver training state-wide.

REVISED – January 13, 2010

Iowa's Race to the Top
Participating Local Education Agency (LEA)
Memorandum of Understanding

Purposes:

Signing this Memorandum of Understanding is required for districts to access their share of the 50% of Iowa's Race to the Top funds that will be allocated directly to participating districts.

Instructions to Complete Participating LEA Memorandum of Understanding (MOU):

1. Make every effort to obtain the signatures of the school board president (required), superintendent, and local teachers' association president.

2. Return signed MOU and Exhibit I—Preliminary Scope of Work

    a. Email a signed MOU in PDF format to Bonnie McIntosh at bonnie@westwinded.com by 4:30 p.m. on January 14, 2010.

    b. Call Bonnie McIntosh to confirm receipt: 877-354-9378 ext. 102 (toll free).

3. If the State is awarded a Race to the Top grant, participating LEAs must submit a Final Scope of Work within 90 days from the date of the award. The Final Scope of Work Award must contain detailed work plan consistent with the preliminary scope of work aligned with the State's grant application, and must include the LEAs specific goals, activities, timelines, budgets, key personnel, and annual targets for key performance measures. The Department will develop a template for the Final Scope of Work and disseminate it to Participating LEAs.

4. Contact Kevin Fangman at Kevin.Fangman@iowa.gov or 515-281-3333 if you have any questions about the contents of the MOU.

5. Contact Bonnie McIntosh at bonnie@westwinded.com or 877-354-9378 ext. 102 with technical questions about submitting the MOU.

IOWA'S RACE TO THE TOP
PARTICIPATING LOCAL EDUCATION AGENCY
MEMORANDUM OF UNDERSTANDING (MOU)

I. SCOPE OF WORK:

This Memorandum of Understanding ("MOU") is entered into by and between the Iowa Department of Education ("Department") and _____ ("Participating LEA"). The purpose of this agreement is to establish a framework of collaboration, as well as articulate specific roles and responsibilities in support of the Department in its implementation of an approved Race to the Top grant application. Exhibit I, the Preliminary Scope of Work, indicates that the Participating LEA agrees to implement all listed components of the State's proposed reform plans, should the State's application be approved by the USED.

II. PROJECT ADMINISTRATION:

A. PARTICIPATING LEA RESPONSIBILITIES:

The Participating LEA will assist the Department in implementing the tasks and activities described in the State's Race to the Top application, should the State's application be approved by the USED. The Participating LEA subgrantee will:

1) Implement the LEA plan as identified in Exhibit I of this agreement.

2) Actively participate in all relevant convenings, communities of practice, or other practice-sharing events that are organized or sponsored by the Department or by USED.

4) Participate, as requested, in evaluations of this grant conducted by the Department or USED.

5) Be responsive to Department or USED requests for information including the status of the project, project implementation, outcomes, and any problems anticipated or encountered.

6) Provide appropriate professional development to teachers and administrators to successfully implement activities outlined in the scope of work.

7) Participate in meetings and telephone conferences with the Department to discuss (a) progress of the project, (b) potential dissemination of resulting non-proprietary products andlessons learned, (c) plans for subsequent years of the Race to the Top grant period, and (d) other matters related to the Race to the Top grant and associated plans.

B. DEPARTMENT RESPONSIBILITIES:

In assisting the Participating LEA in implementing its tasks and activities described in the State's Race to the Top application, the Department grantee will:

1) Work collaboratively with and support the Participating LEA in carrying out the LEA Plan as identified in Exhibit I of this agreement.

2) Timely distribute the Participating LEA's portion of Race to the Top grant funds during the course of the project period and in accordance with the LEA Plan.

3) Provide feedback on the Participating LEA's status updates, annual reports, any interim reports, and project plans and products.

4) Provide or coordinate technical assistance, professional development, and other necessary support;

5) Align the detailed scope of work, to the extent possible, with the Iowa Core Implementation Plan.

C. JOINT RESPONSIBILITIES:

1) The Department and the Participating LEA will each appoint a key contact person for the Race to the Top grant.

2) These key contacts from the Department and the Participating LEA will maintain frequent communication to facilitate cooperation under this MOU.

3) Department and Participating LEA grant personnel will work together to determine appropriate timelines for project updates throughout the whole grant period.

4) Department and Participating LEA grant personnel will negotiate in good faith to continue to achieve the overall goals of the State's Race to the Top grant, even when the State Plan requires modifications that affect the Participating LEA, or when the LEA Plan requires modifications.

D. DEPARTMENT RECOURSE FOR LEA NON-PERFORMANCE:

If the Department determines that the LEA is not acting in good faith to fulfill the applicable requirements, the Department grantee will take appropriate action, starting with a collaborative process between the Department and the LEA. The Department may need to use measures detailed in 34 CFR section 80.43.

III. ASSURANCES:

The Participating LEA hereby certifies and represents that it:

A. Has all requisite power and authority to execute this MOU.

B. Is familiar with the participating district's requirements within the State's Race to the Top grant application and is supportive of the goals and plans for implementation and is committed to working on all applicable portions of the State Plan.

C. Agrees to be a Participating LEA and will implement those portions of the State Plan indicated in Exhibit I, if the State application is funded.

D. Will provide a Final Scope of Work in a format provided by the Department. The Final Scope of Work will describe the LEA's specific goals, activities, timelines, budgets, key personnel, and annual targets for key performance measures ("LEA Plan ") in a manner that is consistent with the Preliminary Scope of Work (Exhibit I) and with the State Plan. The Final Scope of Work is due and must be submitted no later than 90 days after the grant is awarded to the State of Iowa, should the State be awarded the grant.

E. Will comply with all of the terms of the grant, the Department's subgrant, and all applicable Federal and State laws and regulations, including laws and regulations applicable to the Program, and the applicable provisions of EDGAR (34 CFR Parts 75, 77, 79, 80, 82, 84, 85, 86, 97, 98 and 99).

F. Agrees to be a Participating LEA and, if the application is funded, the signatories agree to work together in good faith to implement those portions of Iowa's Plan indicated in the Preliminary Scope of Work. Nothing in this MOU shall be construed to override any rights or duties as provided by collective bargaining law or collective bargaining agreements. The LEA and the local collective bargaining agent agree to negotiate in good faith, and those portions subject to collective bargaining shall be implemented only upon the agreement of the LEA and the local bargaining agent.

IV. MODIFICATIONS:

This MOU may be amended only by written agreement signed by each of the parties to the MOU, and in consultation with USED.

V. DURATION/TERMINATION:

This MOU shall be effective beginning with the date of the last signature hereon and, if a grant is received, ending upon the expiration of the grant project period, or upon mutual agreement of the parties, whichever occurs first.

The Iowa Department of Education will agree to termination by a district that shows that compliance with the MOU will cause an undue burden to the district because either pertinent information has substantially changed since the signing of the MOU or additional specific information was developed after the signing of the MOU.

In order to participate, the LEA must agree to implement all portions of the State Plan as detailed in the attached Exhibit I, and return the signed MOU in PDF format by email to bonnie@westwinded.com no later than 4:30 p.m. on January 14, 2010.

VI. SIGNATURES

President of School Board for the LEA (required):

_____
Signature/Date

_____
Print Name/Title

Superintendent for the LEA:

_____
Signature/Date

_____
Print Name/Title

Authorized Representative of Local Teachers' Association:

_____
Signature/Date

_____
Print Name/Title

Iowa Director of Education:

_____
Signature/Date

_____
Print Name/Title

EXHIBIT I—PRELIMINARY SCOPE OF WORK

Participating LEA (LEA) hereby agrees to participate in implementing the State Plan in each of the areas identified below.

Elements of State Reform Plans	
(A) State Success Factors	
(A)(1) Articulating the state's education reform agenda	**Comments from LEA (optional)**
LEA affirms they will submit their Iowa Core implementation plan to the Iowa Department of Education by July 1, 2010, as required by Iowa law.	
LEA will develop a plan for a competency-based option for a grade span, content area, or 21st century skill by the end of the third year of Iowa's Race to the Top program, using guidance from the pilot state project, and will begin implementing the plan during the fourth year.	
(A)(2) Building strong statewide capacity to scale up, implement and sustain proposed plans	**Comments from LEA (optional)**
LEA will take part in a survey in the fall of 2010 to gather baseline data necessary for tracking implementation of the Iowa Core. (Costs of the evaluation will be covered by the state.)	
LEA affirms they will work with community members and other supporting agencies in implementing the Iowa Core.	
LEA will collaborate with other school districts, AEAs, community colleges, higher education institutions, and other supporting agencies to meet the requirements of the Race to the Top program.	
(A)(3) Demonstrating significant progress in raising achievement and closing gaps	**Comments from LEA (optional)**
LEA will demonstrate in an annual report to the public progress on increasing achievement overall and reductions in achievement disparities among subgroups of students.	
(B) Standards and Assessments	
(B)(3) Supporting the transition to enhanced standards and high-quality assessments	**Comments from LEA (optional)**

LEA will implement a local instructional improvement program to ensure students acquire the essential concepts and skills embodied in the Iowa Core. Such a program incorporates: • a strong and enacted curriculum, • effective curricular materials, • professional development, • district-wide balanced assessment system, • the use of information on student achievement and growth to inform and improve instruction.	
LEA will share implementation data/information/lessons learned with the state.	
LEA will submit samples of multiple, authentic measures of student work to the state once the data platform is operational.	
LEA will implement competency-based promotion for at least one subset of students or content areas by the end of the third year of Iowa's Race to the Top program, using guidance from the pilot state project.	
LEA will adjust reports to parents to reflect student attainment of the Iowa Core, as required in the Iowa Code.	
(C) Data Systems	
(C)(3) Using data to improve instruction:	
(i) Use of local instructional improvement systems	**Comments from LEA (optional)**
LEA will collect and submit examples of student and teacher work for the purpose of developing multiple, authentic measures of student achievement and growth and teacher work for the purpose of professional development, respecting student and teacher confidentiality.	
LEA will implement a local instructional improvement system to provide teachers, principals, and administrators with the information and resources they need to inform and improve their instructional practices, decision-making, and student achievement and growth.	
LEA affirms they will use their Iowa Core implementation plans to support student achievement of the essential concepts and skills outlined in the Iowa Core.	

(ii) Professional development on use of data	Comments from LEA (optional)
LEA will offer professional development to teachers, principals, and administrators in collaboration with the state provided by the state on using data in the balanced assessment and instructional improvement systems.	
(iii) Availability and accessibility of data to researchers	**Comments from LEA (optional)**
The district will make data on student achievement and growth available to researchers as appropriate and as allowed by FERPA with respect to student and teacher confidentiality.	
(D) Great Teachers and Leaders	
(D)(2) Improving teacher and principal effectiveness based on performance:	
(i) Measure student growth	**Comments from LEA (optional)**
LEA will contribute to the development of authentic/multiple measures of achievement and growth (described in section B).	
(ii) Design and implement evaluation systems	**Comments from LEA (optional)**
LEA affirms they engage in teacher and principal evaluation as required in the Iowa Code.	
LEA, in collaboration with their teacher association, will work toward increasing the inclusion of student achievement and growth as a more significant factor in teacher and principal evaluation.	

(iii) Conduct annual evaluations	Comments from LEA (optional)
LEA affirms that: (a) for teachers holding an initial license, they conduct annual summative evaluations; (b) for career teachers with a standard license, they conduct formative evaluations of performance every first and second year of the evaluation cycle for each teacher and a summative evaluation every third year; (c) for principals with an initial license, they conduct annual summative evaluations; (d) for principals with a professional administrator license, they conduct formative evaluations of performance every first and second year of the evaluation cycle for each principal and a summative evaluation every third year; (e) for superintendents, they conduct formative evaluations of performance every first and second year of the evaluation cycle and a summative evaluation every third year.	
(iv)(a) Use evaluations to inform professional development	**Comments from LEA (optional)**
LEA affirms they use evaluations to inform individual and school/district-wide professional development.	
(iv)(b) Use evaluations to inform promotion and retention	**Comments from LEA (optional)**
LEA affirms they use teacher, principal, and superintendent evaluations to inform decisions about employment as provided in the Iowa Code.	
(iv)(c) Use evaluations to inform tenure and/or full certification	**Comments from LEA (optional)**
LEA affirms they use teacher and principal evaluations to inform tenure and/or full certification.	
(iv)(d) Use evaluations to inform removal	**Comments from LEA (optional)**
LEA affirms they use teacher, principal, and superintendent evaluations to inform decisions about employment as provided in the Iowa Code.	
(D)(3) Ensuring equitable distribution of effective teachers and principals:	

(i) High-poverty and/or high-minority schools	Comments from LEA(optional)
LEA affirms they will track and ensure equitable distribution of effective teachers and principals in high-poverty and/or high-minority schools, as the available pool of teachers and principals allows.	
(ii) Hard-to-staff subjects and specialty areas	**Comments from LEA (optional)**
LEA affirms they will track and ensure equitable distribution of effective teachers in hard-to-staff subjects and specialty areas, as the available pool of teachers allows	
(D)(5) Providing effective support to teachers and principals:	
(i) Quality professional development	**Comments from LEA (optional)**
LEA, in collaboration with their Teacher Quality Committee where applicable, will ensure their professional development to improve teaching and learning follows the Iowa Professional Development Model.	
LEA will submit teacher and student artifacts to support professional development.	
LEA will use data on student achievement and growth to determine the professional development it provides/requires.	
(ii) Measure effectiveness of professional development	**Comments from LEA (optional)**
LEA, with their Teacher Quality Committee where applicable, will evaluate of the impact of professional development on teacher practice and the resulting impact on student achievement and growth and improve professional development as a result.	

EXHIBIT I SIGNATURES

President of School Board for the LEA (required):

_____
Signature/Date

_____
Print Name/Title

Superintendent for the LEA:

_____
Signature/Date

_____
Print Name/Title

Authorized Representative of Local Teachers' Association:

_____
Signature/Date

_____
Print Name/Title

Iowa Director of Education:

_____
Signature/Date

_____
Print Name/Title

	LEA Demographics			Signatures on MOUs			MOU Terms	Preliminary Scope of Work – Participation in each applicable Plan Criterion															
Participating LEAs	# of Schools	# of K-12 Students	# of K-12 Students in Poverty	LEA Supt. (or equivalent)	President of local school board (if applicable)	President of Local Teachers Union (if applicable)	Uses Standard Terms & Conditions?	(B)(3)	(C)(3)(f)	(C)(3)(ii)	(C)(3) (iii)	(D)(2) (i)	(D)(2) (ii)	(D)(2) (iii)	(D)(2)(iv)(a)	(D)(2)(iv)(b)	(D)(2)(iv)(c)	(D)(2) (iv)(d)	(D)(3)(f)	(D)(3)(ii)	(D)(5)(i)	(D)(5)(ii)	(E)(2)
Name of LEA here				Y/ N/ NA	Y/ N/ NA	Y/ N/ NA	Yes/ No	Y/ N/ NA	Y/ N/ NA	Y/ N/ NA	Y/ N/ NA	Y/ N/ NA	Y/ N/ NA	Y/ N/ NA	Y/ N/ NA	Y/ N/ NA	Y/ N/ NA	Y/ N/ NA	Y/ N/ NA	Y/ N/ NA	Y/ N/ NA	Y/ N/ NA	Y/ N/ NA
AGWSR	4	578	170	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Adair-Casey	2	342	112	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Albia	6	1126	375	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Alburnett	2	629	79	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Algona	5	1298	364	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Allamakee	6	1277	495	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Allison-Bristow	2	287	85	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Anamosa	3	1281	400	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Anita	2	242	83	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Anthon-Oto	2	279	128	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Aplington-Parkersburg	2	822	228	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Armstrong-Ringsted	2	337	116	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Atlantic	6	1495	604	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Audubon	2	626	208	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Aurelia	3	279	82	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Ballard	4	1565	253	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Battle Creek-Ida Grove	5	686	222	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA

Baxter	2	451	116	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
BCLUW	3	644	190	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Bedford	2	508	222	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Bellevue	2	618	137	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Belmond-Klemme	3	670	240	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Bennett	1	79	21	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Bettendorf	8	4355	964	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
West Hancock	3	637	241	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Burlington	9	4154	2011	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
C and M	2	160	76	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
CAL	2	268	123	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Calamus-Wheatland	2	546	150	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Camanche	3	1044	295	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Cardinal	2	585	280	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Cedar Falls	10	4484	816	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Center Point-Urbana	3	1368	160	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Central	2	506	147	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Central Clinton	4	1468	335	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Chariton	5	1477	658	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Charles City	5	1574	666	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Cherokee	5	1027	418	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Clarion-Goldfield	4	928	332	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Clarksville	2	347	116	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Clear Creek Amana	5	1501	280	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Clearfield	1	28	24	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Clear Lake	4	1405	383	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Clinton	8	3963	1966	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
College	7	4302	1060	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Collins-Maxwell	2	591	92	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Colo-Nesco	4	438	108	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Columbus	3	933	571	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Corwith-Wesley	2	128	60	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA

Creston	5	1445	640	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Danville	2	585	154	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Davis County	4	1188	395	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Decorah Community	5	1627	316	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Delwood	1	110	39	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Diagonal	2	104	59	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Dike-New Hartford	4	815	134	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Dows	1	65	48	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Boyer Valley	2	439	134	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Durant	3	715	149	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Eagle Grove	3	855	383	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Earlham	3	653	95	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
East Marshall	4	867	298	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
East Union	3	446	172	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
River Valley	3	458	182	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Edgewood-Colesburg	2	591	197	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Eldora-New Providence	2	552	233	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Elk Horn-Kimballton	2	262	81	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Emmetsburg	3	764	280	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
English Valleys	2	462	124	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Essex	2	277	86	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Estherville Lincoln	3	1270	562	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Fairfield	6	1756	600	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Fort Dodge	10	3800	1892	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Fort Madison	6	2208	1002	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Fremont	2	147	71	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Fremont-Mills	2	465	181	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Galva-Holstein	3	469	138	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Gilbert	3	1170	77	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Gladbrook-Reinbeck	4	631	128	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Glidden-Ralston	2	380	83	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Graettinger	2	198	83	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA

Greene	2	304	70	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Nodaway Valley	4	726	238	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Griswold	3	613	191	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Guthrie Center	3	570	211	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Clayton Ridge	3	650	209	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Hampton-Dumont	5	1162	533	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Harmony	2	395	130	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Harris-Lake Park	2	308	100	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Highland	4	674	153	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Hinton	3	685	104	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Howard-Winneshiek	8	1321	449	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Hubbard-Radcliffe	2	331	134	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Hudson	3	765	130	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Indianola	7	3361	722	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Interstate 35	4	847	175	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Iowa City	24	11284	3297	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Iowa Falls	4	1110	331	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Iowa Valley	2	641	174	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
IKM	2	366	127	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Janesville Consolidated	2	270	40	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Jesup	6	913	236	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Keokuk	7	2081	1199	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Keota	2	336	54	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Knoxville	6	1922	688	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Lake Mills	3	714	162	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Lamoni	3	326	131	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Lawton-Bronson	2	601	104	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Le Mars	7	2161	460	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Lenox	2	390	173	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
North Cedar	4	884	197	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Lineville-Clio	2	81	36	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Linn-Mar	10	6076	922	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA

Lisbon	3	591	111	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Logan-Magnolia	2	683	172	N	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Louisa-Muscatine	2	892	340	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
LuVerne	1	55	32	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Lynnville-Sully	3	504	67	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Madrid	3	632	105	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Malvern	3	269	115	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Manning	2	435	125	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Manson Northwest Webster	3	652	148	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Maple Valley	2	481	177	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Maquoketa Valley	5	773	222	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Marcus-Meriden-Cleghorn	3	418	99	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Marion Independent	6	1991	579	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Mason City	10	3885	1580	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
MOC-Floyd Valley	4	1297	263	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Midland	3	475	187	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Mid-Prairie	6	1208	304	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
MFL MarMac	4	884	354	N	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Montezuma	3	520	125	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Monticello	4	1037	225	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Moravia	2	331	161	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Morning Sun	1	130	60	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Mount Vernon	3	1249	181	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Muscatine	12	5238	2215	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Nashua-Plainfield	3	705	217	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
New Hampton	4	1073	213	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
New London	2	524	196	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Nora Springs-Rock Falls	2	428	152	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
North Central	2	449	131	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Northeast	3	680	170	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
North Fayette	5	843	253	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA

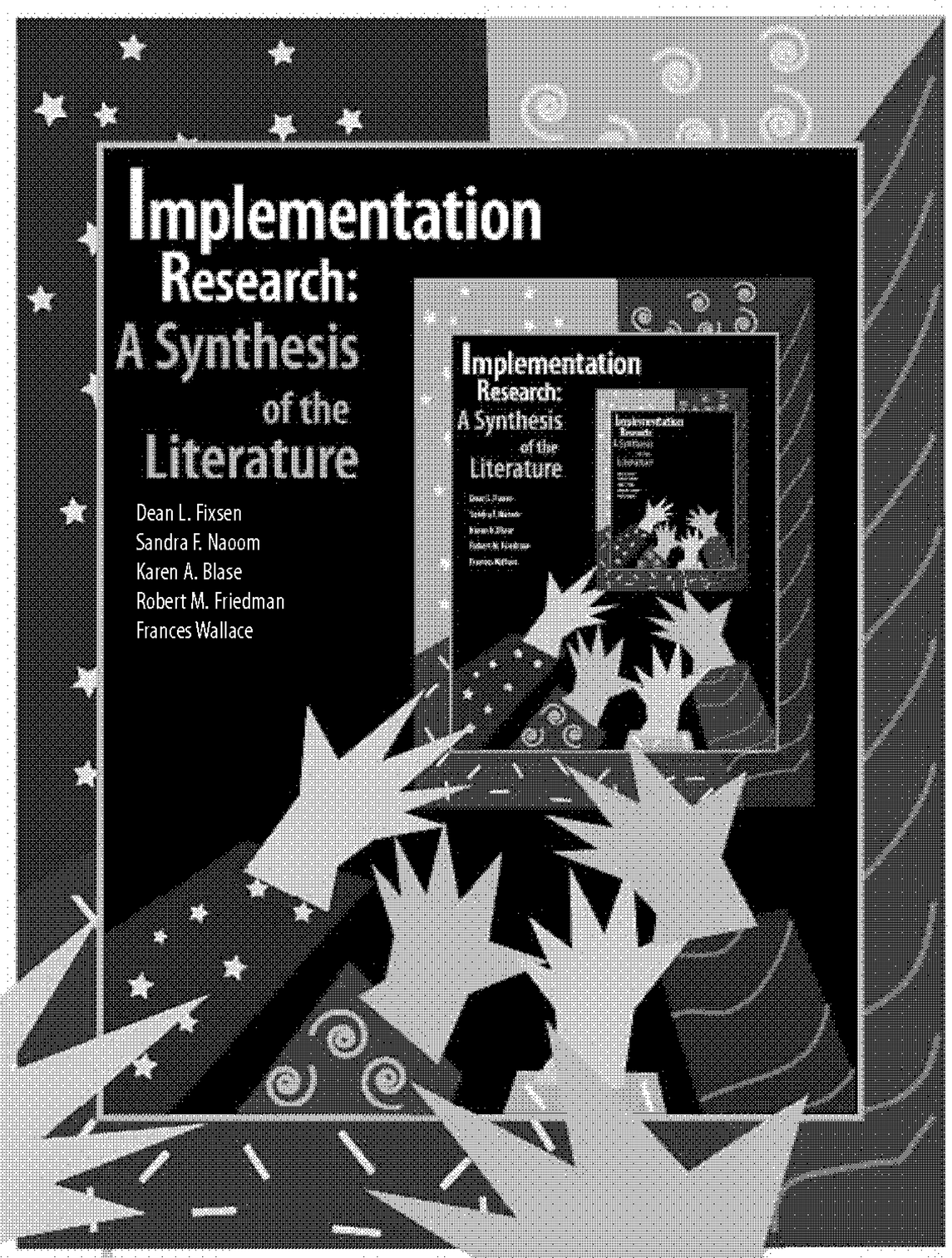
Northeast Hamilton	3	256	68	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
North Mahaska	2	542	178	N	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
North Kossuth	2	254	97	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
North Polk	4	1169	76	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
North Scott	7	2996	635	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
North Tama County	2	518	120	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Northwood-Kensett	2	492	120	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Odebolt-Arthur	3	346	111	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Ogden	3	739	175	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Olin Consolidated	2	197	95	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Osage	4	950	206	N	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Ottumwa	11	4542	2279	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
PCM	4	1039	211	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Pekin	4	775	229	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Pleasant Valley	6	3595	359	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Pleasantville	3	744	221	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Postville	2	542	334	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Prairie Valley	3	693	230	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Preston	2	350	76	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Red Oak	6	1203	561	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Remsen-Union	3	356	76	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Riceville	2	324	67	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Rockwell-Swaledale	2	358	92	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Rockwell City-Lytton	3	480	157	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Rudd-Rockford-Marble Rk	2	525	166	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Ruthven-Ayrshire	2	230	79	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
St Ansgar	3	677	177	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Saydel	4	1338	615	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Sergeant Bluff-Luton	4	1472	295	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Seymour	2	238	111	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Sheffield Chapin	3	368	87	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Sheldon	3	969	266	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA

Shenandoah	4	1006	446	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Sibley-Ocheyedan	4	869	229	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Sidney	2	353	150	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Sigourney	4	645	198	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Southern Cal	2	488	170	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
South Hamilton	2	735	190	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Southeast Webster Grand	5	551	241	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
South Page	2	191	86	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
South Tama County	3	1518	652	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
South O'Brien	2	613	193	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
South Winneshiek	3	552	141	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Southeast Polk	11	5906	1290	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Spencer	5	1939	626	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Spirit Lake	3	1245	284	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Springville	2	408	67	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Stanton	2	268	49	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Starmont	3	676	225	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Stratford	1	93	25	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Terril	2	127	59	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Tipton	3	876	210	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Titonka Consolidated	2	146	58	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Tri-Center	3	749	146	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Tri-County	3	292	112	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Tripoli	2	478	96	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Turkey Valley	2	492	75	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
United	2	330	107	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Valley	2	490	152	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Van Buren	4	700	265	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Ventura	2	361	85	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Vinton-Shellsburg	4	1673	561	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Waco	2	504	186	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Wapsie Valley	7	689	98	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA

Waverly-Shell Rock	8	1979	392	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Wayne	3	599	285	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Webster City	5	1651	545	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
West Burlington Ind	3	707	295	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
West Delaware County	4	1561	392	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Western Dubuque	9	2797	720	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
West Marshall	3	909	244	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
West Sioux	4	681	320	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Williamsburg	3	1109	211	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Winfield-Mt Union	2	437	182	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Winterset	5	1689	485	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Woden-Crystal Lake	2	110	35	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA
Woodbine	2	444	159	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA

Implementation Research: A Synthesis of the Literature

Dean L. Fixsen
Sandra F. Naoom
Karen A. Blase
Robert M. Friedman
Frances Wallace



USF UNIVERSITY OF SOUTH FLORIDA

Tampa, Florida
2005

Acknowledgments

We want to thank the William T. Grant Foundation for funding this project (Grant Number 2487, *Synthesizing Evidence-Based Program Dissemination and Implementation*, to Dean Fixsen, Karen Blase, and Robert Friedman). We appreciate the patient instruction in search techniques and sources provided by Ardis Hanson who heads the library at the Louis de la Parte Florida Mental Health Institute. We are grateful to Michael Haines, Beverly Crockett, and Yvonne Frazier for their diligence in helping to review articles and write cogent summaries. We are indebted to Jonathan Baron, Barbara Burns, William Carter, Patrick Kanary, Robert Paulson, Sonja Schoenwald, and Phillip Strain for their thoughtful and encouraging comments on earlier drafts of this monograph. We also appreciate what we have learned from the many discussions about implementation with Melanie Barwick, David Chambers, Vijay Ganju, Mario Hernandez, Sharon Hodges, John Petrila, Jeanne Rivard, David Shern, Greg Teague, and Jim Wotring who have patiently shared their wisdom. Finally, we want to thank Cindy Liberton, Dawn Khalil and Storie Miller for editing and preparing the document for distribution.

This publication was produced by the
National Implementation Research Network
at the Louis de la Parte Florida Mental Health Institute,
University of South Florida
with financial support from the William T. Grant Foundation
(*Synthesizing Evidence-Based Program Dissemination and Implementation*,
grant #2487).

The opinions expressed in this publication are those of the authors
and do not necessarily reflect those of the William T. Grant Foundation.

© 2005
Louis de la Parte Florida Mental Health Institute Publication #231
Tampa, Florida

Recommended citation:

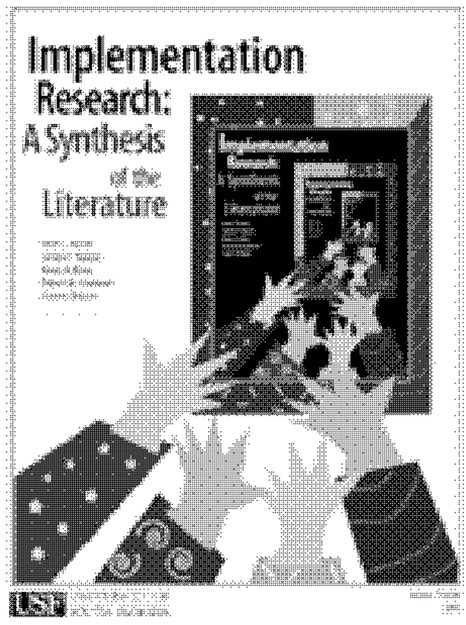
Fixsen, D. L., Naoom, S. F., Blase, K. A., Friedman, R. M. & Wallace, F. (2005). Implementation Research: A Synthesis of the Literature. Tampa, FL: University of South Florida, Louis de la Parte Florida Mental Health Institute, The National Implementation Research Network (FMHI Publication #231).

For more information

See the Web site http://nirn.fmhi.usf.edu

This document may be reproduced in whole or part without restriction as long as the Louis de la Parte Florida Mental Health Institute, University of South Florida is credited for the work. Upon request, the contents of this document will be made available in alternate formats to serve accessibility needs of persons with disabilities.

Selected Excerpts



Contents

Chapter 1 Introduction 1
Review Methods 3
An Implementation Headset 4
Implementation Defined 5
Degrees of Implementation 6

Chapter 2 Implementation in the Context of Community 7
Research on Community Context 8
Measuring Readiness 9

Chapter 3 A Conceptual View of Implementation 11
Conceptual Framework 12
Purveyors 14
Stages of Implementation Defined 15
Exploration and Adoption 15
Program Installation 16
Initial Implementation 16
Full Operation 16
Innovation 17
Sustainability 17
What We Know about Implementation Stages 18
Stages of Implementation and the Literature 18
Research on Stages of Implementation 18
Experimental Analyses of Implementation Strategies 20
Experimental Research: Ineffective Implementation Strategies 20
Experimental Research: Effective Implementation Strategies 21

Chapter 4 Core Implementation Components 23
Core Components Defined 24
Core Components for Interventions 24
Evidence-Based Practices and Evidence-Based Programs 26
Implementing Practices within Organizations 27
Core Components for Implementation 28
Overview and Definitions 28
Sources of Core Implementation Components 31
Developing Self-Sustaining Implementation Sites 32
National Implementation Efforts 34

Chapter 5 Research on Core Implementation Components 35
Staff Selection 36
Experimental Research on Selection 36
Practitioner Selection: Additional Evidence 37
Organization Staff Selection: Additional Evidence 38
Purveyor Staff Selection: Additional Evidence 39
Staff Selection Summary 39

Staff Training 39
Factors that Impact Training 40
Experimental Research on Training Outcomes 40
Experimental Research on Training Methods 41
Training Practitioners: Additional Evidence 41
Training Organizational Staff: Additional Evidence 43
Staff Training Summary 43
Staff Coaching 44
Factors that Impact Coaching 45
Experimental Research on Coaching 46
Additional Evidence for Coaching 46
Staff Coaching Summary 47
Evaluation and Fidelity 47
Staff Evaluation for Performance Improvement 48
Organization-Level Fidelity Assessments 51
Factors that Impact Staff Evaluation for Performance Improvement 53
Experimental Research on Evaluation 53
Staff Evaluation for Performance Improvement: Additional Evidence 53
Organization-Level Fidelity Assessments: Additional Evidence 54
Staff Evaluation to Measure Adherence to Research Protocols 54
Evaluation and Fidelity Summary 55

Chapter 6 Organizational Context and External Influences 57
Literature Related to Organizational Components and External Influence 60
Influence Factors at Work 62
Organizational Change and Development 64
Evaluations of Core Organizational Components 65
Summary 66

Chapter 7 Conclusions and Recommendations 67
Findings & Conclusions 70
Implementation and the Status Quo 71
Recommendations 72
Recommendations for State and National Policy Makers 72
Recommendations for Research on Implementation 74
Recommendations for Effectiveness Research on Practices and Programs 76
Recommendations for Purveyors of Well-defined Practices and Programs 77

Appendices
Appendix A Review Methods....80
Appendix B W.T. Grant Project Literature Review Codebook....84
Appendix C Experimental Studies....91
Appendix D Hypotheses for Advancing Implementation Science....95

References....101

List of Figures

Figure 1 A Conceptual Framework for Implementation of Defined Practices and Programs....12
Figure 2 Implementation Framework Applied to Developing Evidence-based Intervention Practices within Organizations....28
Figure 3 Core Implementation Components....29
Figure 4 Implementation Framework Applied to Developing Self-sustaining Implementation Sites within Organizations in Communities....33
Figure 5 Multilevel Influences on Successful Implementation....59

List of Tables

Table 1 A Summary of a Meta-analysis of the Effects of Training and Coaching on Teachers' Implementation in the Classroom....30
Table 2 Examples of Different Types of Fidelity Measures Across Programs....49
Table 3 Postulated Relationships Among Core Implementation Components, Organizational Components, and External Influence Factors that may Help Explain Various Implementation Outcomes....59
Table 4 Factors Deemed to be Critical to the Operation of a Residential Treatment Program....66
Table 5 The Interaction of Intervention Effectiveness and Implementation Effectiveness....69

Preface

About the Review

This monograph summarizes findings from the review of the research literature on implementation. The review process began by identifying literature reporting any efforts to collect data on attempts to implement practices or programs in any domain, including agriculture, business, child welfare, engineering, health, juvenile justice, manufacturing, medicine, mental health, nursing and social services.

Nearly 2,000 citations were found, 1,054 met the criteria for inclusion in the review, and 743 remained after a full text review. There were 377 out of 743 citations deemed to be most relevant, and 22 studies that employed an experimental analysis of implementation factors.

Over the past decade, the science related to developing and identifying "evidence-based practices and programs" has improved—however the science related to implementing these programs with fidelity and good outcomes for consumers lags far behind. As a field, we have discovered that all the paper in file cabinets plus all the manuals on the shelves do not equal real-world transformation of human service systems through innovative practice. While paperwork and manuals do represent what is known about effective interventions, these tools are not being used effectively to achieve behavioral health outcomes for children, families, and adults nationally. Clearly, state and national policies aimed at improving human services require more effective and efficient methods to translate policy mandates for effective programs into the actions that will realize them.

To this end, our intent is to describe the current state of the science of implementation, and identify what it will take to transmit innovative programs and practices to mental health, social services, juvenile justice, education, early childhood education, employment services, and substance abuse prevention and treatment. The content is distilled from a far-reaching review of existing implementation literature that looks beyond the world of human services to organize and synthesize critical lessons from agriculture, business, engineering, medicine, manufacturing, and marketing. As you will find, authors from around the globe share the rigors of attempting to implement practices and programs and agree that the challenges and complexities of implementation far outweigh the efforts of developing the practices and programs themselves.

During the course of the overall literature review, select studies featuring robust experimental analyses of implementation factors also were mined for common themes and definitions. As a product of this work, conceptual frameworks and a corresponding lexicon emerged to help summarize the information, create understanding, and evolve testable hypotheses. Accordingly, this monograph suggests a unified approach for talking about, studying and promoting implementation in human services.

For example, it became evident that thoughtful and effective implementation strategies at multiple levels are essential to any systematic attempt to use the products of science to improve the lives of children, families, and adults. That is, implementation is synonymous with coordinated change at system, organization, program, and practice levels. In a fundamental sense, implementation appears most successful when:

- carefully selected practitioners receive coordinated training, coaching, and frequent performance assessments;
- organizations provide the infrastructure necessary for timely training, skillful supervision and coaching, and regular process and outcome evaluations;
- communities and consumers are fully involved in the selection and evaluation of programs and practices; and
- state and federal funding avenues, policies, and regulations create a hospitable environment for implementation and program operations.

It also appears that relevant implementation factors and processes are common across domains (e.g., mental health, juvenile justice, education, child welfare). If this is true, then efforts to improve the science and practice of implementation have the potential for positive broad scale impacts on human services, across service systems.

In summary, the results of this literature review and synthesis confirm that systematic implementation practices are essential to any national attempt to use the products of science—such as evidence-based programs—to improve the lives of its citizens. Consequently, a concerted national effort to improve the science and the practice of implementation must accompany support for the science of intervention. The components of implementation and factors promoting its effectiveness must be understood, and we hope the frameworks and recommendations introduced in this volume provide a foundation for this understanding.

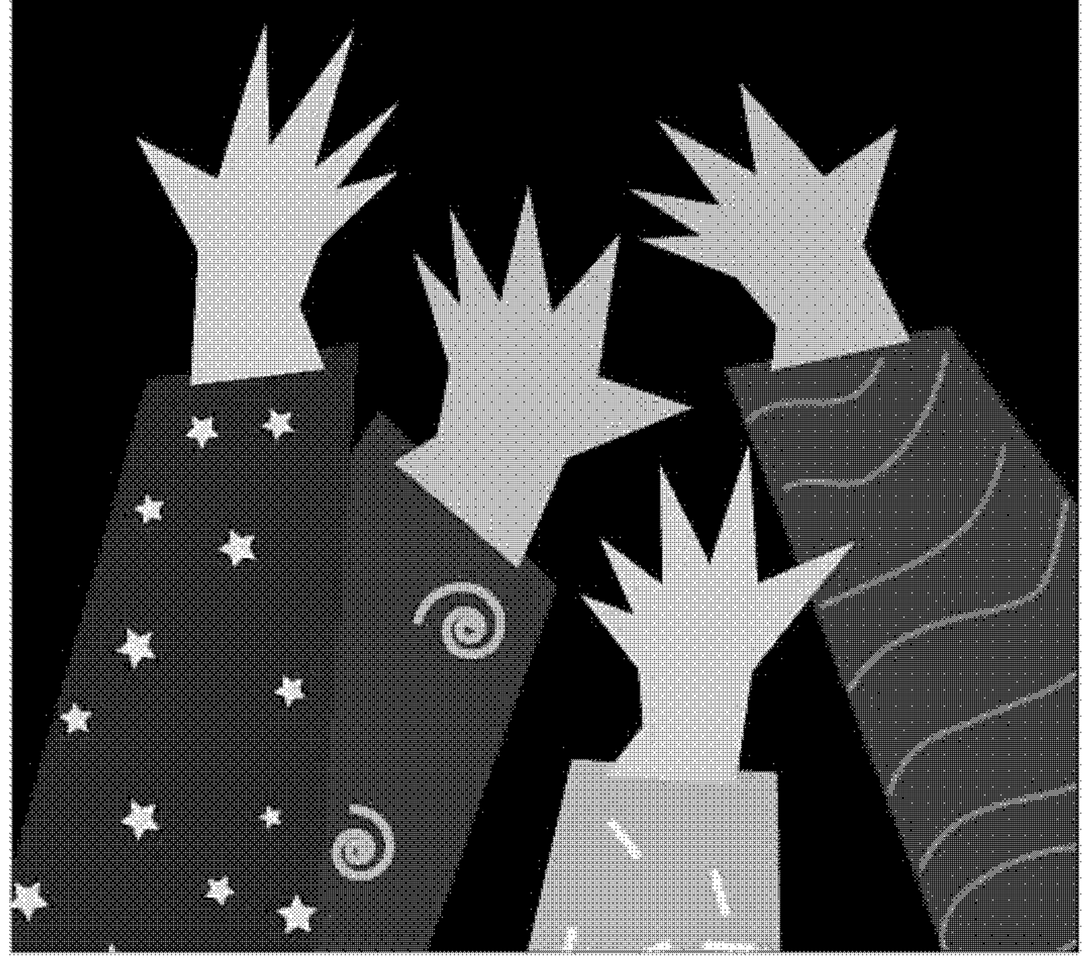
Chapter 1

Introduction

- Review Methods
- An Implementation Headset
- Implementation Defined
- Paper Implementation

"If we want to find ways to achieve greater utilization of…research, merely thinking about utilization cannot take us very far."

— *Beyer & Trice, 1982*



Introduction

It has been well documented in many disciplines that major gaps exist between what is known as effective practices (i.e., theory and science) and what is actually done (i.e., policy and practice).

"The ideas embodied in innovative social programs are not self-executing."

—Petersilia, 1990

Background & Purpose

In the past few years several major reports highlighted the gap between our knowledge of effective treatments and services currently being received by consumers. These reports agree that we know much about interventions that are effective but make little use of them to help achieve important behavioral health outcomes for children, families, and adults nationally. This theme is repeated in reports by the Surgeon General (United States Department of Health and Human Services, 1999; 2001), the National Institute of Mental Health [NIMH] National Advisory Mental Health Council Workgroup on Child and Adolescent Mental Health Intervention Development and Deployment (2001), Bernfeld, Farrington, & Leschied (2001), Institute of Medicine (2001), and the President's New Freedom Commission on Mental Health (2003). The authors call for applied research to better understand service delivery processes and contextual factors to improve the efficiency and effectiveness of program implementation at local, state, and national levels.

Our understanding of how to develop and evaluate evidence-based intervention programs has been furthered by on-going efforts to research and refine programs and practices, to define "evidence bases" (e.g., Burns, 2000; Chambless & Ollendick, 2001; Lonigan, Elbert, & Johnson, 1998; Odom, et al., 2003), and to designate and catalogue "evidence-based programs or practices" (e.g., the National Registry of Evidence-based Practices and Programs, Substance Abuse and Mental Health Services Administration, n.d.; Colorado Blueprints for Violence Prevention, Mihalic, Fagan, Irwin, Ballard, & Elliott, 2004). However, the factors involved in successful implementation of these programs are not as well understood (Backer, 1992; Chase, 1979; Leonard-Barton & Kraus, 1985; Reppucci & Saunders, 1974; Rogers, 1983, 1995; Shadish, 1984; Stolz, 1981; Weisz, Donenberg, Han, & Weiss, 1995). Current views of implementation are based on the scholarly foundations prepared by Pressman & Wildavsky's (1973) study of policy implementation, Havelock & Havelock's (1973) classic curriculum for training change agents, and Rogers' (1983; 1995) series of analyses of factors influencing decisions to choose a given innovation. These foundations were tested and further informed by the experience base generated by pioneering attempts to implement Fairweather Lodges (Fairweather, Sanders, & Tornatzky, 1974) and National Follow-Through education models (Stivers & Ramp, 1984; Walker, Hops, & Greenwood, 1984), among others. Petersilia (1990) concluded that, "The ideas embodied in innovative social programs are not self-executing." Instead, what is needed is an "implementation perspective on innovation—an approach that views postadoption events as crucial and focuses on the actions of those who convert it into practice as the key to success or failure" (p. 129). Based on their years of experience, Taylor, Nelson, & Adelman (1999) stated, "Those who set out to change schools and schooling are confronted with two enormous tasks. The first is to develop prototypes. The second involves large scale replication. One without the other is insufficient. Yet considerably more attention is paid to developing and validating prototypes than to delineating and testing scale-up processes. Clearly, it is time to correct this deficiency." (p. 322). Gendreau, Goggin, & Smith (1999) added that, "we cannot afford to continue dealing with the business of program implementation and related technology transfer topics in a cavalier fashion" (p. 185).

The purpose of this monograph is to describe the results of a far-reaching review of the implementation literature. There is broad agreement that implementation is a decidedly complex endeavor, more complex than the policies, programs, procedures, techniques, or technologies that are the subject of the implementation efforts. Every aspect

of implementation is fraught with difficulty, from system transformation to changing service provider behavior and restructuring organizational contexts. Given the importance of implementation, the purpose of this review is to create a topographical map of implementation as seen through evaluations of factors related to implementation attempts. It is not an attempt to be exhaustive. Some literature reviews have very exacting criteria and review procedures, a style well-suited to areas of well-developed knowledge. With respect to implementation, there is no agreed-upon set of terms, there are few organized approaches to executing and evaluating implementation practices and outcomes, and good research designs are difficult when there are "too many variables and too few cases" (Goggin, 1986). Given the state of the field, the goal was to "review loosely" to capture meaning, detect relationships among components, and help further the development of the practice and science of implementation.

The remainder of this introduction sets the stage for reading the monograph. There is an overview of the review methods in order to provide the reader with a context for evaluating the face validity of the review in terms of scope, findings, and frameworks. This is followed by an orientation to implementation as distinct from program development and a definition of implementation.

Review Methods

The goal of this literature review is to synthesize research in the area of implementation as well as to determine what is known about relevant components and conditions of implementation. Search strategies were developed by the research team as an iterative process in consultation with the Louis de la Parte Florida Mental Health Institute (FMHI) University of South Florida librarian. The research team began the literature searching process by establishing guidelines for citation retrieval. The following citation retrieval criteria were used to select reports, books, and published and unpublished article citations for preliminary review:

- published in English no earlier than 1970,
- the title or abstract contained one or more of the search terms, and
- an empirical study, meta-analysis, or literature review.

Literature with any data (quantitative or qualitative) and any design (surveys to high quality randomized group designs or within subject designs) in any domain (including agriculture, business, child welfare, engineering, health, juvenile justice, manufacturing, medicine, mental health, nursing, and social services) was eligible for inclusion.

Databases searched included PsycINFO, Medline, Sociological Abstracts, CINAHL, Emerald, JSTOR, Project Muse, Current Contents, and Web of Science. Once the research team had completed the literature search, nearly 2,000 citations were retrieved and entered into an EndNote database. The principal investigators then proceeded to pare down the list by reading the titles and abstracts using the same guidelines for citation retrieval (full details are provided in Appendix A). The remaining citations (N = 1,054) were retrieved for full-text review and content analysis. The review team developed a data extraction tool called the *article summary* to record pertinent information from each document reviewed. The article summary covered several aspects including: the research domain, topic or purpose of the article, methods, results and findings, codes or stages of implementation as defined by the codebook, selected quotations, selected references, and memos or notes made by the reviewer about the article.

Full text reviews were completed by one of the five review team members. Each team member was asked to make note of any particularly noteworthy or "significant" implementation articles in the memo section of the article summary if it met one of the following three criteria: (1) well-designed experimental evaluations of implementation factors, (2) careful reviews the implementation literature, or (3) well-thought-out but more theoretical discussions of implementation factors. For example, "significant" articles included literature describing group or within-subject experimental designs, meta-analyses, or literature reviews pertaining to specific implementation factors; literature describing useful frameworks or theoretical summaries; or qualitative analyses of specific implementation efforts. Literature that focused on author-generated surveys of those involved in implementation efforts, focused on interventions and only provided incomplete de-

Given the state of the field, the goal was to "review loosely" to capture meaning, detect relationships among components, and help further the development of the practice and science of implementation.

The lack of common definitions and the lack of journals specifically oriented to implementation research probably reflect the poorly developed state of the field.

scriptions of implementation factors, or primarily presented the opinions of the authors were not included as "significant" articles.

After reading the full text, about 30% of the 1,054 articles were dropped from the review. Most often, deletions occurred when implementation was mentioned in the title or abstract but was not evaluated in any way in the article itself (i.e., was not "an empirical study, meta-analysis, or review"). Once the full text review was completed, 743 articles remained, about half (377) of which were identified as significant implementation articles. Of these, 22 articles reported the results of experimental analyses (randomized group or within subject designs) or meta-analyses of implementation variables. Article summaries were sorted into content areas by searching across articles for the codes described in the codebook (see Appendix B). The principal investigators then proceeded to review each area for common implementation themes and patterns.

The review was challenging due to the lack of well-defined terms. Diffusion, dissemination, and implementation sometimes referred to the same general constructs and, at other times, quite different meanings were ascribed to the same terms. For example, "implementation" sometimes means "used" in a general sense or "put into effect" with specific reference to a program or practice. At other times it referred to a set of methods to purposefully help others make use of a program or practice on a broad scale. Similarly, coaching, supervision, academic detailing, and on-the-job teaching were used to describe similar activities. Are the "implementers" the ones teaching or the ones being taught? The answer is, it depends on the author. We have created our own lexicon with definitions (see Appendix A and B) in the text to help guide the reader through this monograph and to reduce confusion. The lack of common definitions and the lack of journals specifically oriented to implementation research probably reflect the poorly developed state of the field.

An Implementation Headset

It is important to have an "implementation headset" while reading this monograph. From an implementation point of view, there are always two important aspects of every research study, demonstration project, or attempted intervention. In each study, there are intervention processes and outcomes and there are implementation processes and outcomes. When implementing evidence-based practices and programs, Blase, Fixsen, & Phillips (1984) discussed the need to discriminate implementation outcomes (Are they doing the program as intended?) from effectiveness outcomes (Yes, they are, and it is/is not resulting in good outcomes.). Only when effective practices and programs are fully implemented should we expect positive outcomes (Bernfeld, 2001; Fixsen & Blase, 1993; Institute of Medicine, 2001; Washington State Institute for Public Policy, 2002).

So far, as the wave of interest in evidence-based practices and programs has swept across human services, the nature of the evidence about interventions has received the preponderance of attention from researchers and policy makers. As Kitson, Harvey, & McCormack (1998) stated, "... the investment in developing structures to ensure gold standard research evidence has yet to be matched by equal investment in ways of elucidating how organizations change cultures or use different techniques to manage the change process" (p 157). From an implementation point of view, doing more and better research on a program or practice itself does not lead to more successful implementation. A series of meta-analyses and detailed assessments of the strength of research findings for certain practices and programs may help a consumer, agency, or community select a program. However, more data on program outcomes will not help implement that program. Implementation is an entirely different enterprise. Thus, an intervention must be well defined and carefully evaluated with regard to its effects on its intended consumers (children, families, adults). Likewise, implementation of an intervention must be well defined and carefully evaluated with regard to its effects on its intended consumers (practitioners, managers, organizations, systems).

An implementation headset also is critical for understanding and interpreting data from outcome

studies. Rossi & Freeman (1985) identified three ways in which inadequate measures of program implementation may lead to an incorrect conclusion that an intervention is ineffective. First, no treatment or too little treatment is provided; second the wrong treatment is provided; and third, the treatment is nonstandard, uncontrolled, or varies across the target population. Dobson & Cook (1980) described "type III" (type three) errors. That is, evaluating a program that was described but not implemented. In their analysis of a program for ex-offenders, they found only 1 in 20 consumers actually received the program as described in the methods section. Thus, the outcome data could not be attributed to the program as described. Feldman, Caplinger, & Wodarski (1983) found that apparent findings of no differences among groups were explained by measuring the application of the independent variables. Those youths who were in groups whose leaders skillfully followed the protocol had better outcomes.

Outcome interpretation is further compromised when control groups utilize the components of the evidence-based program or practice, or, if the experimental programs fail to implement key aspects of the intervention. In studies of one evidence-based program (Assertive Community Treatment or ACT; Bond, Evans, Salyers, Williams, & Kim, 2000) it was found in one case that a control site had incorporated many ACT principles (McHugo, Drake, Teague, & Xie, 1999), while in another that the experimental sites had implemented fewer aspects of the ACT model than expected (Bond, Miller, Krumweid, & Ward, 1988). Dane & Schneider (1998) conducted a literature review of prevention programs published between 1980 and 1994. They found that only 39 (24%) of 162 outcome studies documented the implementation of the independent variables (i.e., fidelity) and only 13 used a measure of fidelity as a variable when analyzing the results. They also noted that the amount of documentation of fidelity found in their review (24%), "compared to the 20% found by Peterson, et al. (1982) in 539 experimental studies published from 1968 to 1980 in the *Journal of Applied Behavior Analysis,* the 18.1% found by Moncher and Prinz (1991) in 359 treatment outcome studies published in clinical psychology, psychiatry, behavior therapy, and family therapy journals from 1980 to 1988, the 6% found by Rogers-Weise in 88 group-design parent training studies published from 1975 to 1990, and the 14.9% noted by Gresham et al. (1993) in evaluations of behaviorally based interventions published from 1980 to 1990" (p. 41). Dane & Schneider (1998) concluded that, "A reorganization of research priorities is needed to facilitate less confounded, better quality evaluations of preventive interventions" (p. 42).

Thus, implementation variables are not synonymous with those involved in interventions and implementation outcomes are important to measure, analyze, and report when attempting to interpret research findings or broad scale applications (Bernfeld, 2001; Blase et al., 1984; Dusenbury, Brannigan, Falco, & Hansen, 2003; Forsetlund, Talseth, Bradley, Nordheim, & Bjorndal, 2003; Goodman, 2000; Mowbray, Holter, Teague, & Bybee, 2003; Rychetnik, Frommer, Hawe, & Shiell, 2002).

Implementation Defined

What is "implementation?" For the purposes of this review, implementation is defined as a specified set of activities designed to put into practice an activity or program of known dimensions. According to this definition, implementation processes are purposeful and are described in sufficient detail such that independent observers can detect the presence and strength of the "specific set of activities" related to implementation. In addition, the activity or program being implemented is described in sufficient detail so that independent observers can detect its presence and strength. As noted earlier, when thinking about implementation the observer must be aware of two sets of activities (intervention-level activity and implementation-level activity) and two sets of outcomes (intervention outcomes and implementation outcomes).

The view becomes a bit more complicated when implementation-savvy researchers talk about implementation-related "interventions" with community leaders, agency directors, supervisors, practitioners, policy makers, and funders. For purposes of this monograph, we will use "interventions" to mean treatment or prevention efforts at the consumer level and "implementation" to mean efforts to incorporate a program or practice at the

For the purposes of this review: ***Implementation*** is defined as a specified set of activities designed to put into practice an activity or program of known dimensions.

community, agency, or practitioner levels. Also, it is common to read about "implementation" of a program or practice as if it were an accomplished fact when the context of the statement makes it clear that some process (more or less clearly described) had been put in place to attempt the implementation of that program or practice (e.g., funding, policy mandate). When faced with the realities of human services, implementation outcomes should not be assumed any more than intervention outcomes are assumed.

Degrees of Implementation

During the course of the review, it was noted that various authors discussed the purposes and outcomes of implementation attempts in different ways (Goggin, 1986). The purposes and outcomes of implementation might be categorized as:

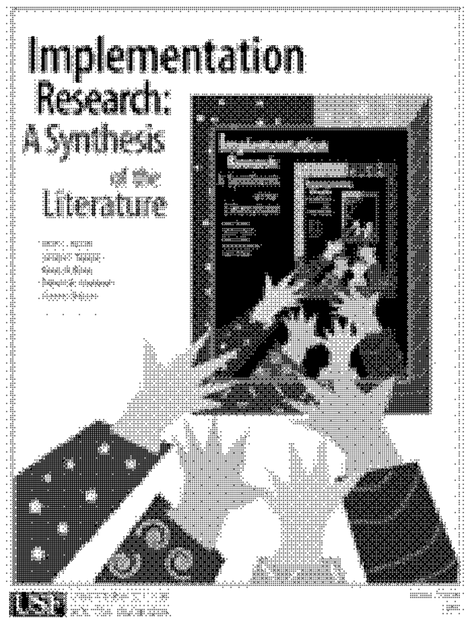
Paper implementation means putting into place new policies and procedures (the "recorded theory of change," Hernandez & Hodges, 2003) with the adoption of an innovation as the rationale for the policies and procedures. One estimate was that 80-90% of the people-dependent innovations in business stop at paper implementation (Rogers, 2002). Westphal, Gulati, & Shortell (1997) found in their survey of businesses that, "If organizations can minimize evaluation and inspection of their internal operations by external constituents through adoption alone, they may neglect implementation altogether, decoupling operational routines from formally adopted programs." (p. 371). Thus, paper implementation may be especially prevalent when outside groups are monitoring compliance (e.g., for accreditation) and much of the monitoring focuses on the paper trail. It is clear that paperwork in file cabinets plus manuals on shelves do not equal putting innovations into practice with benefits to consumers.

Process implementation means putting new operating procedures in place to conduct training workshops, provide supervision, change information reporting forms, and so on (the "expressed theory of change" and "active theory of change," Hernandez & Hodges, 2003) with the adoption of an innovation as the rationale for the procedures. The activities related to an innovation are occurring, events are being counted, and innovation-related languages are adopted.

However, not much of what goes on is necessarily functionally related to the new practice. Training might consist of merely didactic orientation to the new practice or program, supervision might be unrelated to and uninformed by what was taught in training, information might be collected and stored without affecting decision making, and the terms used in the new language may be devoid of operational meaning and impact. In business, this form of implementation has been called the Fallacy of Programmatic Change. That is, the belief that promulgating organizational mission statements, "corporate culture" programs, training courses, or quality circles will transform organizations and that employee behavior is changed simply by altering a company's formal structure and systems (Beer, Eisenstat, & Spector, 1990). It is clear that the trappings of evidence-based practices and programs plus lip service do not equal putting innovations into practice with benefits to consumers.

Performance implementation means putting procedures and processes in place in such a way that the identified functional components of change are used with good effect for consumers (the "integrated theory of change," Hernandez & Hodges, 2003; Paine, Bellamy, & Wilcox, 1984). It appears that implementation that produces actual benefits to consumers, organizations, and systems requires more careful and thoughtful efforts as described by the authors reviewed in this monograph.

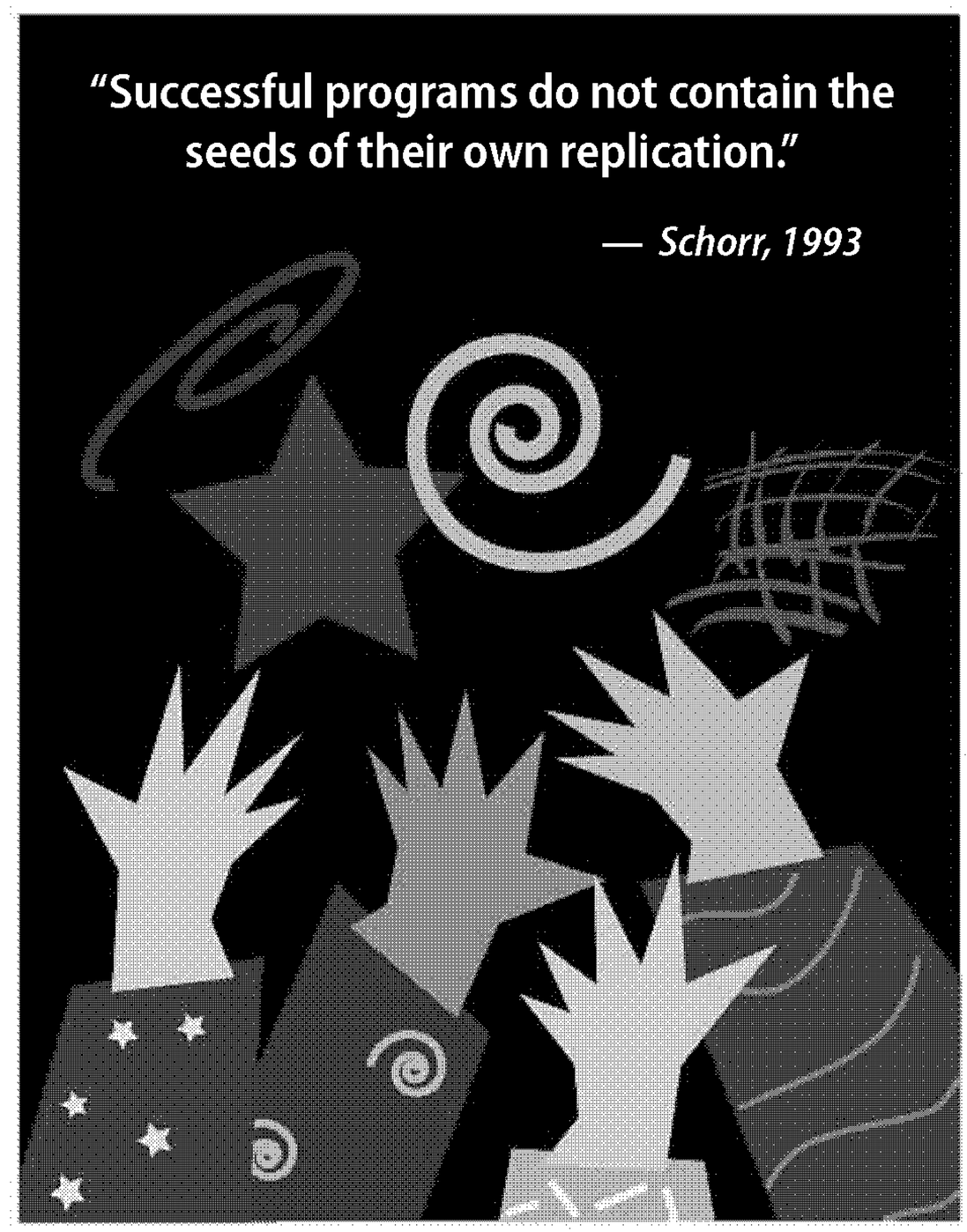
Excerpted



Chapter 7

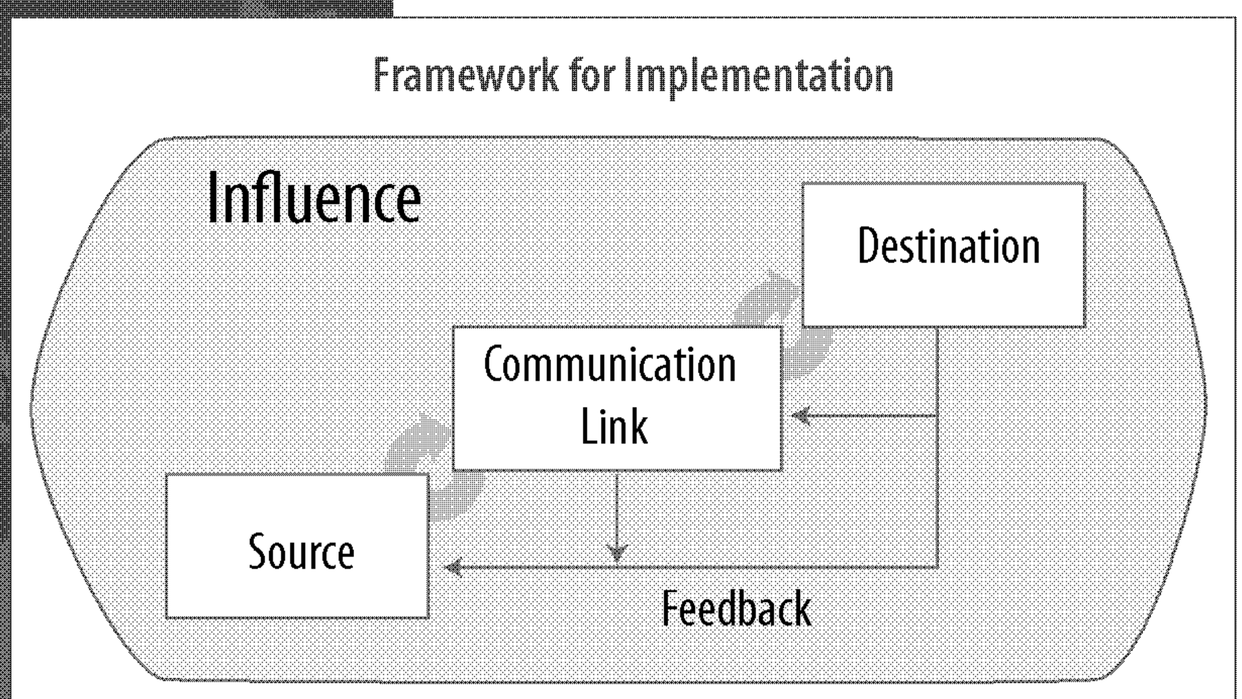
Conclusions and Recommendations

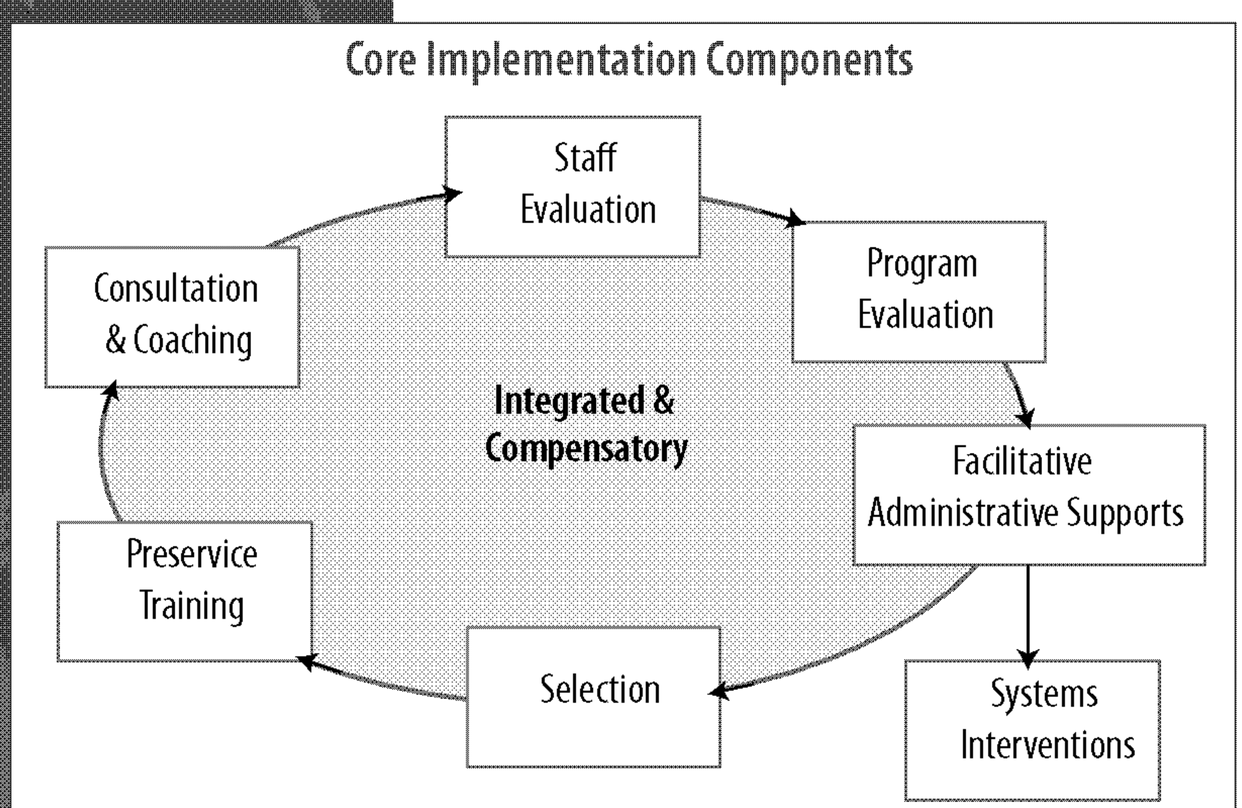
- Recommendations for State and National Policy Makers
- Recommendations for Research on Implementation
- Recommendations for Effectiveness Research on Practices and Programs
- Recommendations for Purveyors of Well-defined Practices and Programs

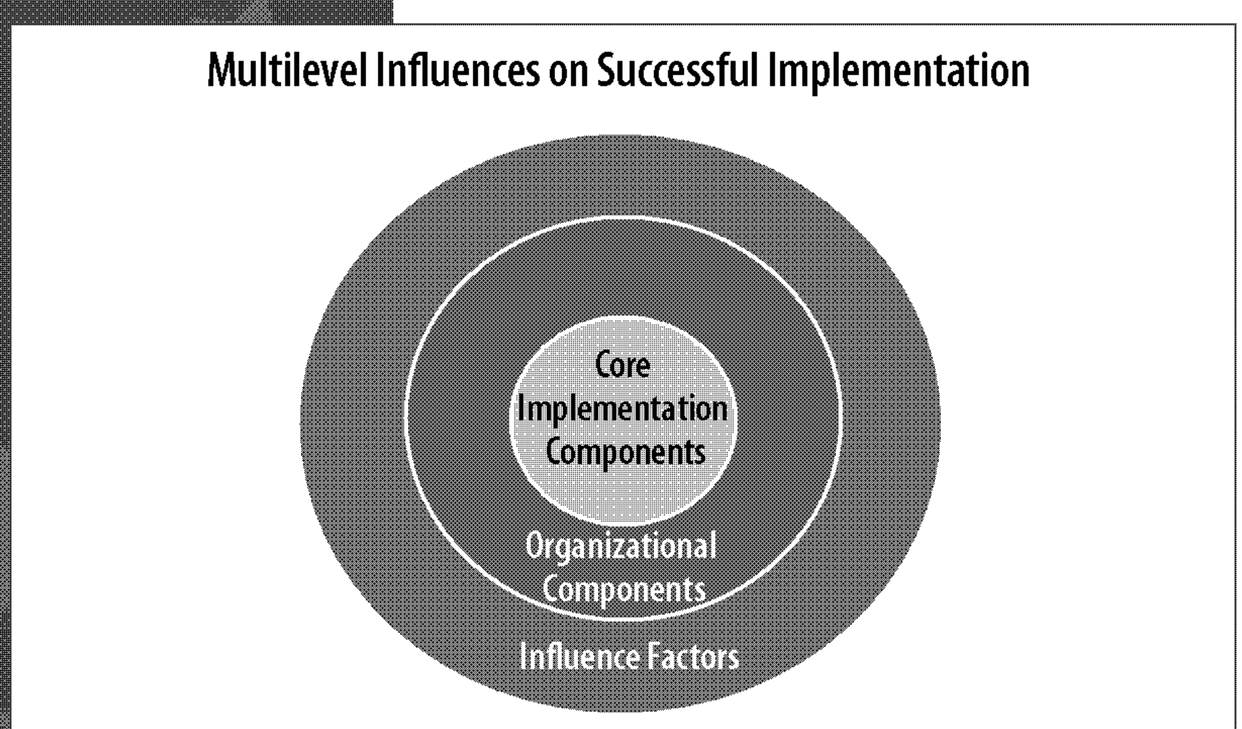


Conclusions and Recommendations

The literature reviewed for this monograph clearly points to the importance of implementation variables in the essential work of making science useful to service.







Implementation practices function in a complex ecology of best intervention practices, organizational structures and cultures, policy and funding environments, and community strengths and needs. Given the preponderance of evidence from a variety of sources, implementation appears to be a crucial component of moving science to service with fidelity and good outcomes for children, families, and adults. In this chapter conclusions and recommendations are presented for policy makers, state planners, purveyors, managers of provider organizations, and researchers.

At this point, the growing body of literature on implementation is sufficient to benefit human services. The review of the literature described in this monograph assesses the evidence and provides a topographical view of the characteristics of successful implementation activities and efforts across domains. The review resulted in the identification of implementation factors and the development of frameworks for helping make sense of the findings. These include an overall framework for implementation (Chapter 3, Figure 1), a framework for core implementation components (implementation drivers; Chapter 4, Figure 3), and a framework for understanding how organizational and external factors might influence the functioning of core implementation components (Chapter 6, Figure 5). In addition, several possible stages of implementation were identified (Chapter 3). It was encouraging to note that similar core implementation components seem to apply equally well to a broad range of programs and practices across a variety of domains. These commonalities bode well for guiding current planning and policy efforts, and research to further the development of the science and practice of implementation.

This report is based on a broad-based search of the literature and a full text review of 1,054 sources. The full text review further reduced the number of sources to 743 that were empirical studies, meta-analyses, or literature reviews related to implementation factors. About half (377) of the sources were judged to be "significant" (i.e.,

implementation articles that met one of the following three criteria: (1) well-designed experimental evaluations of implementation factors, or (2) careful reviews of the implementation literature, or (3) well-thought-out but more theoretical discussions of implementation factors). Only 22 articles reported the results of experimental analyses (randomized group or within subject designs) or meta-analyses of implementation variables. The extent of the available literature related to implementation confirms the findings of two other recent reviews in the medical field. Greenhalgh, Robert, MacFarlane, Bate, & Kyriakidou (2004) conducted a search of the health care literature that specifically looked more broadly at diffusion, dissemination, implementation, or routinization of innovations. Their search resulted in 1,024 full-text reviews and 495 sources that met their criteria for inclusion. Of the 495 sources, 213 were empirical studies and 282 were non-empirical. Ellis, Robinson, Ciliska, Armour, Raina, Brouwers, et al. (2003) examined strategies that have been evaluated to disseminate cancer interventions, did full text screening for 456 articles, and ended up with 31 studies that focused on implementation or diffusion factors themselves.

Thus, in the panoply of articles published over the last few decades regarding important issues and practices in human services, these reviews agree that scant attention has been given to evaluation of clear and effective methods to move science to service and transform human service systems nationally.

The diversity of literature sources, language, definitions of concepts, and data collection methods posed many problems in searching for and reviewing the implementation literature (Chapter 1). After their review of implementation of cancer research, Ellis, et al. (2003) also concluded that the wide variation in methodology, measures, and use of terminology across studies limited interpretation and prevented meta-analyses. While this diversity is frustrating during the review process and does limit statistical approaches to meta-analysis, it also has some benefits with respect to conclusions from the review. That is, conclusions can be stronger when there is agreement across evidence sources from so many different domains, different conceptual orientations, different approaches to measurement, and different qualitative and quantitative research methods. In essence, the convergence of factors, themes and evidence across such diverse parameters allows a clearer view of the commonalities that seem to exist with respect to implementation factors separate and apart from the particular program or practice that is being implemented. In addition, to the extent that there was overlap, there was a high level of agreement between the findings from experimental studies and non-experimental studies. Such agreement lends support to the validity of the conclusions provided below.

Table 5
The Interaction of Intervention Effectiveness and Implementation Effectiveness.

		Effectiveness of *Implementation* Practices	
		Effective	Ineffective
Effectiveness of *Intervention* Practices	Effective	Good Implementation Outcomes Good Consumer Outcomes	Poor Implementation Outcomes Poor Consumer Outcomes
	Ineffective	Good Implementation Outcomes Poor Consumer Outcomes	Poor Implementation Outcomes Poor Consumer Outcomes

As noted in the review (Chapter 1), good outcomes for consumers occur when effective practices are implemented effectively. As shown in Table 5, when effective intervention practices are implemented ineffectively, poor results occur for consumers. On the other hand, good implementation outcomes can occur regardless of the effectiveness of the intervention practices. That is, even poor intervention programs can be implemented effectively and achieve good implementation outcomes (such as high levels of practitioner compliance with protocols and competence in delivery of the intervention, see Chapter 4). Even though poor intervention practices are effectively implemented they still produce poor consumer outcomes because the intervention practices themselves are not effective. As noted in Chapter 1, this is a compelling rationale for measuring both intervention and implementation outcomes so that outcome data can be interpreted. For policy makers, state planners, managers of provider organizations, and researchers, it is important to give as much attention to the development and measurement of implementation practices as is given to intervention practices. By doing so, intervention effectiveness problems can be discrimi-

It was encouraging to note that similar core implementation components seem to apply equally well to a broad range of programs and practices across a variety of domains. These commonalities bode well for guiding current planning and policy efforts, research to further the development of the science and practice of implementation.

nated from implementation effectiveness problems and services to consumers can be improved. The ability to make this discrimination can lead to more appropriate strategies that more efficiently and effectively address ineffective outcomes. It is important to remember that strategies to address implementation problems will be different from strategies to address the ineffectiveness of the intervention itself.

The following sections present the conclusions and recommendations from this review. While the current interest in implementation stems from the current interest in evidence-based practices and programs and closing the gap between science and service, the literature makes it clear that effective implementation procedures are applicable to any well-defined policy, program, or practice or any well operationalized set of beliefs, values, or philosophies. As seen in the review (Chapter 4), knowing the core components is critical to implementation success. Thus, clarity of the operations that define procedures is more important to implementation success than the amount or quality of data regarding the effectiveness of those procedures. In the conclusions and recommendations, evidence-based practices and programs will be mentioned only when there is some special applicability.

Findings & Conclusions

The findings of this review can help guide current efforts to implement programs and practices in human service settings. The information resulting from the literature review provides an overview of the "best evidence" with respect to implementation garnered from researchers, evaluators, and purveyors across a number of domains from mental health to manufacturing.

At this point, there is good evidence for what does not work, reasonable evidence for what does work, and a clear lack of evidence in other areas. The conclusions based on the evidence are presented in this section.

First, the best evidence points to what does not work with respect to implementation. Although there are few experimental studies (summarized in Appendix C), the results of those carefully designed studies confirm the results of the overall review of the implementation evaluation literature (also see the reviews by Ellis, et al., 2003 and Greenhalgh, et al., 2004):

- Information dissemination alone (research literature, mailings, promulgation of practice guidelines) is an ineffective implementation method, and
- Training (no matter how well done) by itself is an ineffective implementation method.

Although these have been two of the most widely used methods for attempting implementation of policies, programs, and practices, they repeatedly have been shown to be ineffective in human services, education, health, business, and manufacturing. This finding has clear implications for policy makers, state planners, managers of provider organizations, and purveyors. A different approach needs to be taken to implement policies, programs, and practices effectively.

Second, there is good evidence that successful implementation efforts designed to achieve beneficial outcomes for consumers require a longer-term multilevel approach. The literature reviewed in Chapters 3 and 4 provides evidence related to practice-based practitioner selection, skill-based training, practice-based coaching, practitioner performance evaluation, program evaluation, facilitative administrative practices, and methods for systems interventions. In addition, a framework for thinking about these implementation components as part of an overall integrated and compensatory effort is presented in Chapter 3. The strongest evidence concerns skill-based training and practitioner performance or fidelity measures. Good evidence also supports the need for coaching and practitioner selection. The evidence is sparse and unfocused with regard to program evaluation, facilitative administrative practices, and system intervention methods. Based on extensive data and a conceptual framework, policy makers, state planners, managers of provider agencies, and purveyors can now include a more complete set of components (Chapters 3 and 4) in their implementation plans in order to more effectively implement policies, programs, and practices.

Third, there is little evidence related to organizational and system influences on implementation (Chapter 6), their specific influences, or the mechanisms for their impact on implementation efforts. Yet, there seems to be little doubt about

the importance of these organizational and influence factors among those who have attempted broad-scale implementation. The task of aligning system and organizational structures with desired practices seems to be a continuous one that engages policy makers, state planners, managers of provider agencies, and purveyors of programs and practices. This is an important area with little data to inform decision making. A framework for trying to understand the relationships among system, organizational, and practice variables was presented in Chapter 6 as a possible guide to planners and purveyors.

Fourth, perhaps the most noticeable gap in the available literature concerns interaction effects among implementation factors and their relative influences over time. Tantalizing tidbits have been provided in recent studies by Panzano, et al. (in press), Schoenwald, et al. (2003; 2004), Fixsen, et al. (2001), Felner et al., (2001), Joyce & Showers (2002), and Khatri & Frieden (2002). These authors have begun a process to carefully evaluate the various links among implementation stages, implementation components, and purveyor approaches with adoption rates, program and practitioner effectiveness, and implementation site sustainability as the dependent measures. However, analyzing interaction effects is a difficult task given the sheer number of implementation variables identified as important in this review. The study of interaction effects over time will require planning among researchers, policy makers, federal and state funders, and purveyor groups to develop a multi-year program of research to tease out the most useful combinations of implementation factors at each stage of implementation site development.

Implementation and the Status Quo

It is important to recognize that the current structures and processes of many human service organizations (especially behavioral and physical health organizations) and related systems may make it difficult to systematically implement programs and practices. First, human service organizations frequently serve a large population base with a wide range of age groups and complex combinations of presenting problems, many of whom do not neatly fit the more specific inclusion/exclusion criteria that typify evidence-based practices and programs.

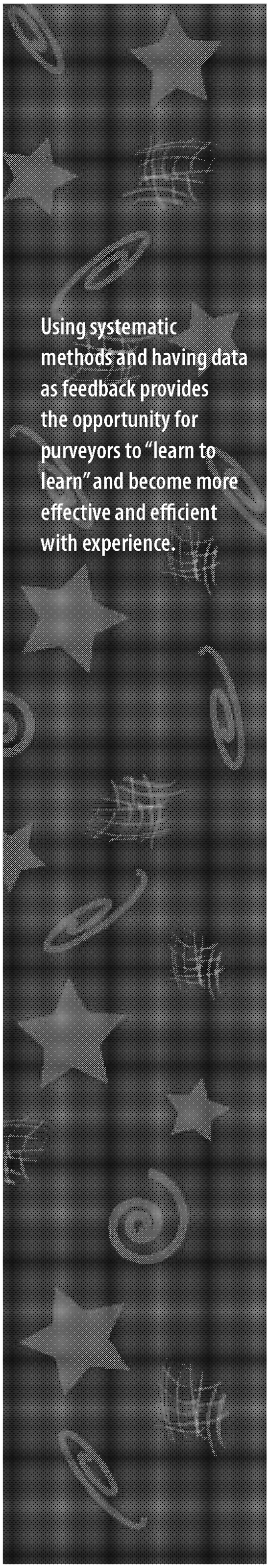
Second, most of the behavioral health organizations operate on what is essentially a "credentialed practitioner model," a model that also is well entrenched in professional associations, human resource policies, state laws, and funding requirements. In this staffing model, individual therapists are hired with the appropriate academic and/or licensing credentials. The clinical practice of the therapist stems from his or her unique education and training experiences. The individual credentialed practitioner staffing model results in an "eclectic" approach to treatment in any given organization, not one focused on a particular program or practice for particular populations or consumers.

Third, supervision in human service organizations usually does not focus on adhering to a particular model but is more oriented toward administration (paperwork, procedures, policies) and solving challenges related to particular consumers. Feedback from supervisors often is related to meeting productivity standards that impact billing and income rather than competence.

Fourth, staff evaluation typically relies on the opinion of the supervisor and manager and is not based on performance or adherence to a defined set of practices.

Fifth, organizational credentialing bodies (e.g., JCAHO, CARF, COA) are geared more towards procedures (i.e., paper implementation or process implementation as described in Chapter 1) and do not hold organizations accountable for client-level outcomes (i.e., performance implementation).

Sixth, funding often depends upon the number of "billable hours" with clear guidelines for what constitutes a billable activity. Activities related to implementation (e.g., exploring and planning, time spent in training, time spent with



a coach, staff performance evaluation, de-briefing and innovating) typically are not funded by these mechanisms.

Finally, many human service organizations are thinly resourced and face high rates of turnover at practitioner and leadership levels that are disruptive to any attempts to systematically implement practices of any kind.

Because the status quo is so thoroughly entrenched, the implementation of evidence-based practices and programs initially may take persistent efforts over longer periods of time. As seen in this review, organizational change and systems interventions are viewed as necessary parts of implementation processes (Chapter 6) and need to be strategically and persistently utilized to change the status quo. The difficulty of changing the status quo was recognized when implementation research first began. For example, Williams (1975) described the need for persistent effort when he concluded that "the implementation period for complex social programs is not a brief interlude between a bright idea and opening the door for service… the translation into useful field concepts often demands long, hard work" (p 531-532). The difficulties remain today as noted by the NIMH National Advisory Mental Health Council Workgroup on Child and Adolescent Mental Health Intervention Development and Deployment (2001) that found, "in the complex area of interventions for child mental health disorders, effective knowledge transfer is labor-intensive and expensive" (p 71). The time frames for implementation with fidelity may be reduced as purveyors use systematic implementation methods and collect information on their implementation outcomes. Using systematic methods and having data as feedback provides the opportunity for purveyors to "learn to learn" and become more effective and efficient with experience. For example, after several years of implementation experience and data collection, Fixsen, Blase, Timbers, & Wolf (2001) reduced by 50% the average time needed to help a new site achieve full implementation. Transforming current human service systems nationally will require a dedicated effort to install effective programs and create performance-oriented cultures in human service organizations and supporting systems.

Recommendations

The recommendations are divided into four areas: recommendations for state and national policy makers, recommendations for research on implementation, recommendations for effectiveness research on practices and programs, and recommendations for purveyors of evidence-based practices.

Recommendations for State and National Policy Makers

Greater attention to implementation policies and practices is crucial to the process of transforming human services from its current state of providing highly variable, often ineffective, and sometimes harmful services to consumers (Institute of Medicine, 2001; U.S. Department of Health and Human Services, 1999; 2001). As noted above, most human services currently are practitioner-centered. That is, practitioners have individual educational and life experiences that lead them to provide treatment in a particular way. As experience is gained, knowledge and skill improvements are accumulated by the practitioner. When one practitioner is replaced by another, the accumulated knowledge is lost and the treatment program is altered to reflect the philosophy, approach, and skill levels of the new practitioner. This practitioner-centered approach to providing services within organizations may account for a considerable proportion of the variability in approaches and levels of effectiveness lamented by national reviews.

In a transformed human service system, services are program-centered or practice-centered rather than practitioner-centered. That is, well-specified practices and programs (along with beliefs, values, and philosophies; Chapter 4) are chosen to solve particular problems and are implemented with fidelity in organizations and systems designed to facilitate the implementation of those practices and programs. Based on the experiences within and across implementation sites, knowledge and innovations are accumulated by purveyors and by implementation sites. The accumulated knowledge and innovations are used to continuously improve the practices and programs themselves with resulting benefits to consumers, practitioners, organizations, and human service systems.

In order to promote state and national policies that facilitate the implementation of well-defined practices and programs to help transform human services, the areas that follow require immediate attention.

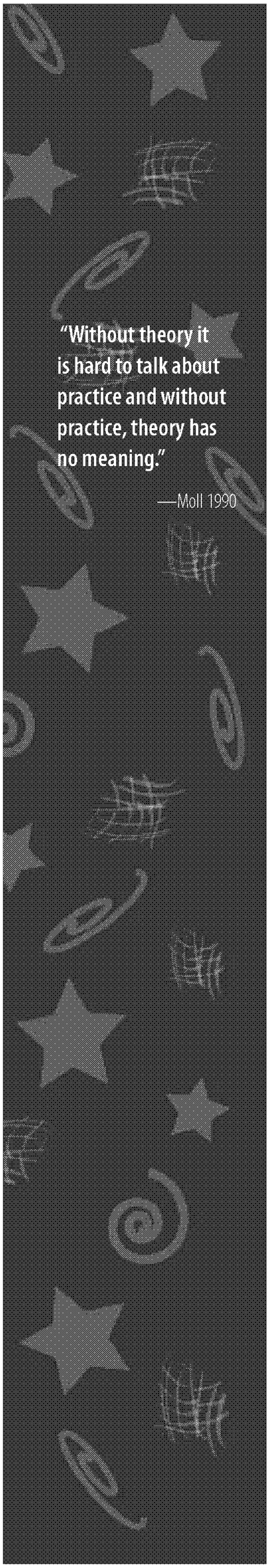
First, policy makers and planners at state and federal levels need to become aware of the information regarding implementation then begin to build their knowledge into state and federal policies and guidelines that impact human services. "Alignment" of policies, procedures, and practices to promote desired changes is a common theme in the business literature and is directly applicable to human services (Table 3 in Chapter 6). Steps to raise awareness and create action agendas were outlined by Edwards et al. (2000) and reviewed in Chapter 2. With respect to the steps described by Edwards et al. (i.e., from no awareness, denial, and vague awareness to preplanning, preparation, and action), many federal and state policy makers and planners are probably engaged somewhere in the first three steps. Recent developments in the implementation field are not well known or commonly understood in public service systems. Thus, researchers, purveyors, and others knowledgeable about implementation issues need to actively involve themselves in creating awareness at federal and state levels and help policy makers and planners move toward greater support of implementation efforts. Policy makers and planners work from the best information available to them. The implementation community of practice needs to help them obtain better information about best practices in implementation.

Second, in order to benefit consumers of human services nationally, federal and state governments need to invest in the development and use of implementation strategies and methods that are grounded in research and elaborated through accumulated experience. This is similar to the investments that governments have made in computers and information technology over the past 20 years. Over many years, scientists and programmers created computer hardware and software. State and federal governments then adopted particular computer systems, paid for their installation, hired specialists to help assure their usefulness and maintenance, paid for upgrading of skills among the workforce, and continue to pay for replacements and upgrades each year as needs change and technology advances. The implementation of computer technology has become an accepted part of budgets in human services (Wotring, 2004). A similar investment in using implementation technology will be required to bring the benefits of well-defined practices and programs to consumers in each state. However, to continue the computer analogy, implementation of programs and practices should not be viewed as "plug and play," where, somehow, new practices can be successfully added to ongoing operations without impacting those operations in any significant way. Instead, implementation of new practices in an organization should be viewed as changing operating systems, from a Microsoft disk operating system to an Apple operating system perhaps, while the computer is plugged in and successfully performing on-going operations.

Third, federal and state funding strategies for human services are critical to implementation of well-defined practices and programs. The analysis of funding and its relationship to implementation should be a priority for state and federal initiatives interested in system reform and transformation. Given what is known about implementation, federal, state, and private foundation efforts to support system transformation and the promulgation of well-defined programs and practices need to develop a four-point approach to funding. These four funding streams include:

- Funding for start up costs associated with the practice or program (e.g., exploration and planning, running current services while new services come on line, equipment, infrastructure),
- Funding for the often intensive implementation services provided by purveyors (e.g. attendance at community forums, working meetings, assessments, program installation, providing the core implementation components, initial implementation, organizational change),
- Funding methods for the service itself on an on-going basis with an eye to creating a good fit between the service provision requirements and funding regulations, and
- Funding and regulations that support and facilitate the ongoing operation of the infrastructure required for continued fidelity and

1. Infuse knowledge about implementation into state and federal policy
2. Invest in development and use of implementation technologies
3. Develop funding strategies to support implementation of evidence-based programs
   - start up costs
   - purveyor support
   - adequate funding for services
   - ongoing support of infrastructure for sustainability



sustainability (e.g., continual training, supervision and coaching, fidelity measures, outcome data collection). This may include ongoing costs associated with service and accountability requirements of purveyors.

Given the range and complexity of implementation activities described in this review of the literature, enabling legislation, new regulations, and financial support are urgently needed. As we have seen throughout this review, successful implementation strategies take time and resources. Half-hearted attempts or ill-advised attempts to implement well-defined practices and programs are a waste of time and resources and may only further frustrate and disillusion human service consumers, providers, and system managers. This will require a change in priorities at the federal level. The essential challenge is to ensure that the incentives, structures, and operations at the systems, organizational, and practitioner level are consistent with each other and aligned in a way that supports the desired practitioner behavior.

Recommendations for Research on Implementation

Since the beginnings of the field, the difficulties inherent in implementation have "discouraged detailed study of the process of implementation. The problems of implementation are overwhelmingly complex and scholars have frequently been deterred by methodological considerations ... a comprehensive analysis of implementation requires that attention be given to multiple actions over an extended period of time" (Van Meter & Van Horn, 1975, p. 450 - 451; Greenhalgh, Robert, MacFarlane, Bate, & Kyriakidou, 2004). The studies in this review demonstrate that implementation needs to be treated as a process with interactive components that are integrated and compensatory.

Research that focuses specifically on implementation will be useful to the extent that it improves practice and advances our conceptual and theoretical understanding (generalizable knowledge) of the important factors involved. As Moll (1990) pointed out, "Without theory it is hard to talk about practice and without practice, theory has no meaning." Advancing theory and improving implementation strategies depend on having more and better research. Research funding and research review criteria as well as priorities within the federal government and private foundations need to focus considerably more research attention on implementation strategies and components.

Pronovost, Rinke, Emery, Dennison, Blackledge, & Berenholtz (2004) note that 99% of the medical research budget is devoted to understanding disease biology and developing effective therapies while 1% is devoted to learning how to implement those therapies safely with patients. While this is better than it used to be (up from one-fourth of 1% in 1977, Brown & Flynn, 2002), the disparity may help explain the current science to service gap. It appears from this review that having well-researched practices and programs is a good start but the eventual benefits of those practices and programs nationally may rest on understanding how to create functional and hospitable socio-political contexts and effective implementation strategies. If, as it seems, implementation efforts across widely divergent domains successfully use similar strategies and core implementation components, then research on implementation factors can have wide-ranging benefits to all human services.

There are several general recommendations for research on factors important to successful implementation. In addition, some specific hypotheses have been developed to encourage research in areas revealed by this review. The specific hypotheses are provided in Appendix D. The general recommendations are provided in this section.

First, considerably more research attention needs to focus on core intervention components to open up the "black boxes" of evidence-based practices and programs (Chapter 4). National implementation efforts can be facilitated by careful specification of what "it" is that is being implemented. As noted in Chapter 4, research that assesses the effectiveness of individual intervention components is essential for defining the core components of an evidence-based program or practice. Knowing the core intervention components may allow for more efficient and cost effective implementation and lead to more confident decisions about what can be adapted to suit local conditions and what must be preserved at an implementation site. Given that there are over 550 named therapies already (Hoagwood, 2004), a side benefit of intervention component research may

be to identify core components that seem to be a part of many successful interventions (Chorpita, Yim, & Dondervoet, 2002; Embry, 2004). To increase external validity, these components need to be researched in applied settings and need to include a measure of social validity (i.e., consumer and family satisfaction with the goals, specific procedures, and particular outcomes). Eventually, these core intervention components (e.g., relationship development, skill teaching, consumer voice and choice, collaboration) could be taught to practitioners more generally, perhaps as part of secondary education curricula and other workforce development initiatives, in order to enhance the pace of implementation nationally.

Second, research needs to be conducted to determine the effectiveness of implementation strategies and procedures as they are actually used in practice. Just as in intervention research, implementation research also will need to carefully define and measure the independent variables that are connected to the dependent variables associated with changes in practitioner, program, and systems behavior. For example, with respect to practitioners, it is not enough to say "practitioners were trained in a 3-day workshop." All that statement tells us is that all (most?) of the practitioners sat in a room for 3 days as someone attempted to teach them something. Was the trainer well trained and competent? Did the content accurately reflect descriptions of the core intervention components? Were the training procedures based on effective methods as documented in the literature? Are pre-post knowledge and skill assessments routinely performed to see if trainees actually acquired key knowledge and skills? Are training strategies adjusted regularly based on immediate and longer-term outcome data? Similar research questions could be asked with respect to practitioner selection, coaching /consultation / supervision procedures, methods to assess staff performance and fidelity to prescribed procedures, and methods to effectively support intended procedures administratively.

Third, research needs to be conducted on implementation outcomes that are independent of the content of the specific practice or program being implemented. Implementation practices within an organization and implementation programs and strategies offered by purveyors need to be evaluated in their own right. Toward this end, research is needed to help develop measures that reflect implementation processes and outcomes (as opposed to intervention processes and outcomes) at multiple levels. Scientifically reliable and valid measures can operationalize implementation practices, enhance understanding, and allow tests of hypothesized components and their linkages in conceptual frameworks. Once practical measures are in place purveyors and researchers can begin to assess the range of interaction effects across components and across time. Given the complexities of multi-level influences on implementation efforts, a full range of quantitative and qualitative research methods will need to be employed. At this point in the development of the field, any data are better than no data and simultaneously collected data at several levels can lead to incremental improvements in implementation knowledge and research methods. However, these data will not be produced until reliable and valid measures of implementation processes are developed.

Fourth, research related to organizational and socio-political factors that directly influence implementation efforts can help define hospitable practices and environments in which the probability of successful implementation and sustainability is increased. There will need to be organized efforts (e.g., centers of excellence, state and local committees) that solicit feedback and listen to the early adopters and implementers of well defined programs and practices. This feedback (e.g. backward policy mapping) can guide policy development that is based on barriers encountered and recommendations for facilitative policies and regulations. Descriptions of apparently effective practices can lead to research in this difficult area. Implementation science was initiated in the policy area (Pressman & Wildavsky, 1973) and further research can help develop a better understanding of the socio-political variables and organizational contexts that impact implementation.

1. Identify core intervention components of evidence-based programs and practices
2. Determine effectiveness of implementation procedures as they are actually used in practice
3. Measure implementation outcomes independent of a specific program or practice
4. Describe organizational and socio-political factors hospitable to implementation

Recommendations for Effectiveness Research on Practices and Programs

Most articles reporting research evidence on programs and practices do not operationalize the strategies and conditions that could advance replication and implementation agendas (Chapter 1). There are several factors that appear to militate against reporting information relevant to implementation in the context of effectiveness trials. First, communication between scientists and practitioners seems, more often than not, to be unidirectional with the result that practice issues may poorly inform science. Beutler, Williams, Wakefield, & Entwistle (1995) conducted a national survey of 325 psychologists who were clinicians or researchers. They found that psychological practitioners value research and consider their practices to be augmented by scientific findings. However, "to the degree that communication is going on between scientists and clinicians in psychology, it is largely uni-directional: Clinicians value and listen to science more than scientists value and listen to clinicians" (p. 989). For example, Mimura & Griffiths (2003) did an exhaustive literature review regarding an important practice issue in nursing (workplace stress, burnout, and high turnover for nurses). They found only 7 studies and those had small effect sizes (not enough change in stress to have much chance of influencing turnover). The authors pointed out that clinicians and agencies face many practical issues that are not well researched by the university-based research community and the transfer of science to service might be facilitated by research that is more relevant to current issues faced in clinical settings. Second, as Burns (2000) pointed out, the external validity of research is greatly enhanced when interventions are developed and studied in the field with real-world adult, child and family consumers. Applied research done in context addresses the concerns often raised about closely controlled efficacy studies that serve highly select populations under conditions that are not found in the community at large. Third, researchers are not writing for the purpose of implementation, they are writing for publication in journals with page limits. With limited space in scientific journals, the focus is on data analyses and results. Consequently, there is not enough detail in the methods section to inform implementation (Backer, Liberman, & Kuehnel, 1986). "A recent meta-analysis of indicated prevention programs found that 68.5% of the programs were described too broadly to be replicated and very few included measurement of treatment fidelity" (Domitrovich & Greenberg, 2000, p. 197).

Bull, Gillette, Glasgow, & Estabrooks (2003) recommended the RE-AIM framework (www.re-aim.org) for conducting and reporting research so that it has a better chance of being translated to practice. This framework focuses on the inclusion of and attention to data that likely will be highly relevant to implementation. Bull, et al. (2003) analyzed research on work-site health promotion (e.g. nutrition, exercise, smoking cessation) with respect to the inclusion of data related to the RE-AIM framework. A summary of the RE-AIM framework and the findings from Bull, et al. (2003) are as follows:

- ***Reach (individual level):*** Data about the participants in the study. *Data on characteristics of participants versus nonparticipants were reported in fewer than 10% of the studies.*
- ***Efficacy/Effectiveness* (individual level):** Data about impact on participants, on process and primary outcomes, and on positive and negative outcomes (including quality of life). *None reported on quality of life issues for participants, none measured potential negative outcomes, 67% reported behavioral outcomes, and 54% reported attrition rates by post-test.*
- ***Adoption* (setting level):** Data about the settings (e.g., exclusionary criteria, number participating out of those approached, representativeness of the settings). *Only 25% of the studies reported on intervention adoption.*
- ***Implementation* (setting/agent level):** Extent to which interventions were delivered as intended. *Implementation data were reported in 12.5% of the studies.*
- ***Maintenance* (individual and setting):** Long-term effect for individuals and attrition. *Only 8% of the studies reported any type of maintenance data.*

Thus, research planning with a focus on implementation variables, routine inclusion of a broader array of variables, and reporting of implementation-relevant research findings will better inform

future implementation efforts related to those programs or practices. This could be aided by more applied research that focuses specifically on service-related issues and by research reports that describe interventions (independent variables) as carefully as research and statistical methods.

Recommendations for Purveyors of Well-defined Practices and Programs

Given the transactional nature of implementation, research on implementation needs to reflect the complexity of the effort with simultaneous multilevel measures of implementation efforts and outcomes (e.g., Panzano, et al., in press; Schoenwald, Sheidow, & Letourneau, 2004). As noted previously, such research likely will be done across multiple implementation sites that are being established by various program models and will require considerable advance planning and collaboration among purveyors. What can purveyors do to increase successful implementation and contribute to the science of implementation? Developing on-going partnerships with researchers over a considerable period of time will be required if the complexities of multi-site and multi-program research agendas are to be pursued successfully. Purveyors and researchers can create open and mutually beneficial partnerships that have purveyors setting agendas that are important to implementation outcomes and that can be developed for theory-building with the help of researchers skilled in participatory research and community partnerships.

In addition, purveyors can commit to on-going relationships with implementation sites for the purpose of identifying beneficial innovations, creating a community of practice that has functional processes to facilitate the integration of innovations. A community of practice functions as a self-sustaining "learning community" (McDermott, 1999a; Rosenheck, 2001) where members with diverse experiences interact frequently to share their collective wisdom and determine new courses of action that might benefit many of the members. Creating a community of practice also benefits workforce development. Practitioners, administrators, and researchers in a community of practice can become increasingly knowledgeable not only about the specific practice or program but also about the science and practice of implementation. Systematic replications of well-defined programs and practices with new populations will more likely be implemented with fidelity in shorter timeframes.

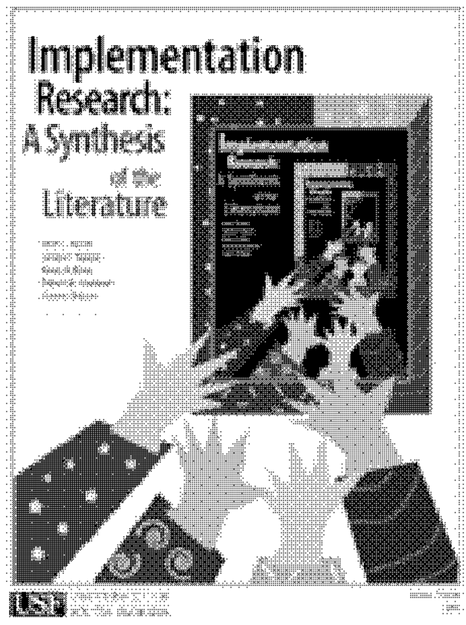
In addition to the need for communities of practice that are program or practice specific, there also is a strong need for private foundation support to establish a community of practice related to implementation. Up to this point, purveyors have worked in teams to implement specific practices or programs with fidelity and good effect. However, as found in manufacturing, teams that perform at peak levels also tend to become isolated and become "silos" themselves. A "double knit" organizational scheme that crossed manufacturing teams with communities of practice was required to keep the teams fresh and exposed to diversity and new ideas (e.g., McDermott, 1999b). Similar benefits also might accrue in the nascent field of implementation of well-defined practices and programs. For human services, this means that members of highly functional purveyor teams (e.g., MST Services, Inc., Incredible Years, Nurse Family Partnerships) also would be members of various communities of practice (e.g., trainers, coaches, evaluators, administrators, etc. from a number of different purveyor teams). And importantly, diverse groups of purveyor teams can come together to discuss and create new learning around agendas related to implementation.

In summary, the science of implementation is beginning to yield data and information that can help ensure that what is known through science is implemented with integrity. Research, policy, and practice agendas related to implementation need to be nurtured, debated, studied, and translated into practical advice that can transform human services. We are optimistic that learning and practice can advance all human services as common principles, procedures, and practices are illuminated through research and the development of communities of science and practice.

Recommendations for Purveyors

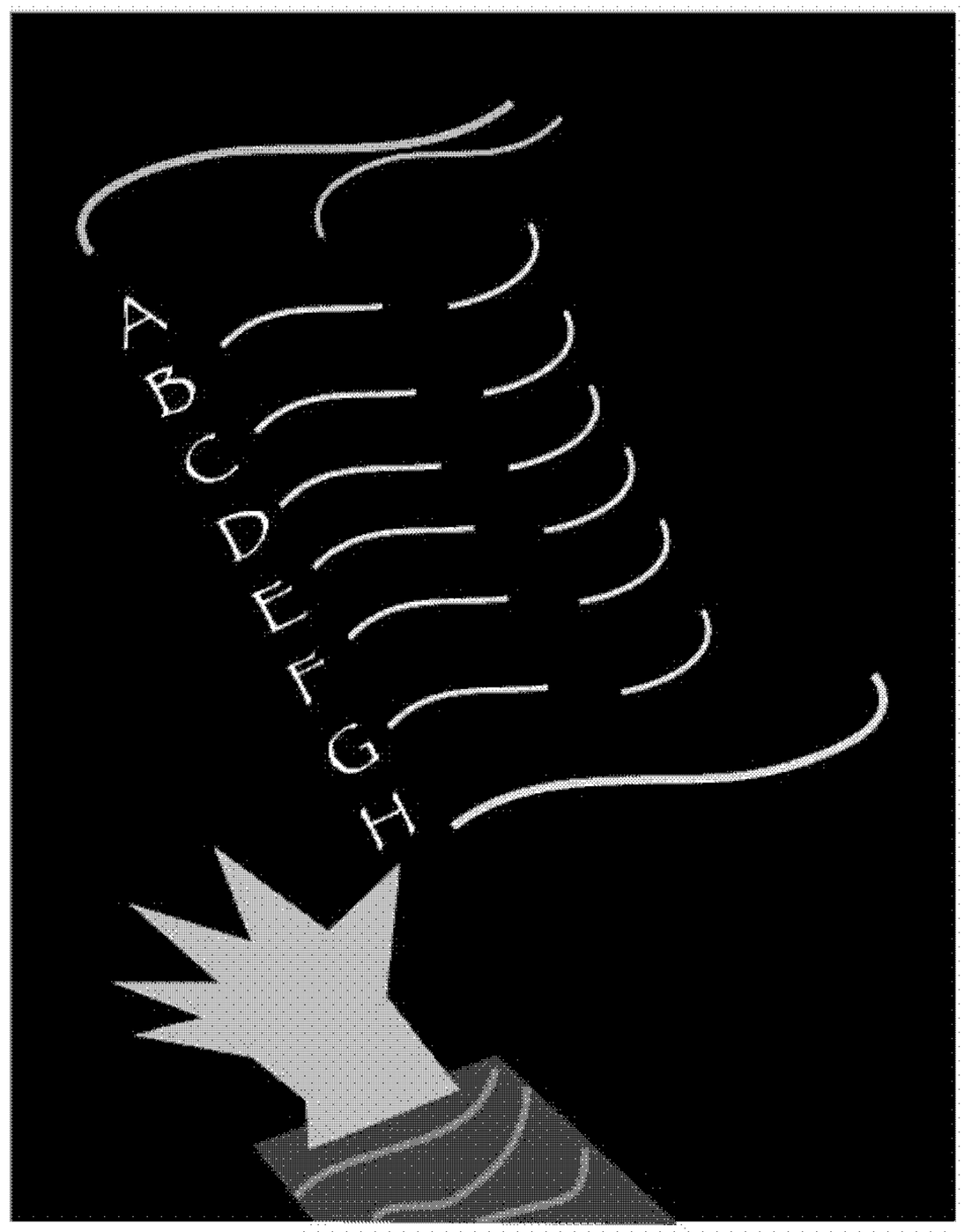
1. Develop partnerships with skilled researchers
2. Establish a community of practice at implementation sites
3. Share lessons learned across functional purveyor teams from different programs

Excerpted



References

Citations related to implementation of programs & practices



References

Aarons, G. A. (2004). Mental Health Provider Attitudes Toward Adoption of Evidence-Based Practice: The Evidence-Based Practice Attitude Scale (EBPAS). *Mental Health Services Research, 6*(2), 61-74.

Abraham, M., Crawford, J., & Fisher, T. (1999). Key factors predicting effectiveness of cultural change and improved productivity in implementing total quality management. *International Journal of Quality and Reliability Management, 16*(2), 112-132.

Adams, P. (1994). Marketing social change: The case of family preservation. *Children and Youth Services Review,* 16, 417-431.

Adelman, H. S., & Taylor, L. (2003). On sustainability of project innovations as systemic change. *Journal of Educational and Psychological Consultation, 14*(1), 1-25.

Ager, A., & O'May, F. (2001). Issues in the definition and implementation of "best practice" for staff delivery of interventions for challenging behaviour. *Journal of Intellectual & Developmental Disability, 26*(3), 243-256.

Alavi, M., & Joachimsthaler, E. A. (1992). Revisiting DSS Implementation Research: A Meta-Analysis of the Literature and Suggestions for Researchers. *MIS Quarterly, 16*(1), 95-116.

Alexander, J. F., & Parsons, B. (1973). Short-term Family Intervention: A Therapy Outcome Study. *Journal of Consulting & Clinical Psychology, 2,* 195-201.

Alexander, J. F., Pugh, C., Parsons, B., & Sexton, T. L. (2000). Functional family therapy. In D. S. Elliott (Ed.), *Book three: Blueprints for violence prevention (2nd ed.).* Golden, CO: Venture.

Al-Mashari, M., & Al-Mudimigh, A. (2003). ERP implementation: lessons from a case study. *Information Technology, 16*(1), 21-33.

Altshuller, G. S. (1984). *Creativity as an exact science: The theory of the solution of inventive problems.* New York: Gordon and Breach.

Anderson, J., & Narasimhan, R. (1979). Assessing Project Implementation Risk: A Methodological Approach. *Management Science, 25*(6), 512-521.

Andreasen, A. R. (1995). *Marketing Social Change.* San Francisco: Jossey-Bass Publishers.

Annual Report to Congress. (2003). *Chapter V: An Analysis of Implementation of Systems of Care at Nine CMHS Grant Communities.* Washington, DC: SAMHSA.

Armstrong, M. I. (2003). *Health care reform tracking project (HCRTP): Promising approaches for behavioral health services to children and adolescents and their families in managed care systems-4: Accountability and quality assurance in managed care systems.* Tampa, FL: Research and Training Center for Children's Mental Health, Department of Child and Family Studies, Division of State and Local Support, Louis de la Parte Florida Mental Health Institute, University of South Florida (FMHI Publication #211-4).

Arthur, M. W., & Blitz, C. (2000). Bridging the gap between science and practice in drug abuse prevention through needs assessment and strategic community planning. *Journal of Community Psychology, 28*(3), 241-255.

Atherton, F., Mbekem, G., & Nyalusi, I. (1999). Improving service quality: experience from the Tanzania Family Health Project. *International Journal for Quality in Health Care, 11*(4), 353-356.

Azocar, F., Cuffel, B., Goldman, W., & McCarter, L. (2003). The impact of evidence-based guideline dissemination for the assessment and treatment of major depression in a managed behavioral health care organization. *Journal of Behavioral Health Services & Research, 30*(1), 109-118.

Azocar, F., Cuffel, B. D., Goldman, W., & McCulloch, J. (2001). Best practices: Dissemination of guidelines for the treatment of major depression in a managed behavioral health care network. *Psychiatric Services, 52*(8), 1014-1016.

Bachman, S. S., & Duckworth, K. (2003). Consensus building for the development of service infrastructure for people with dual diagnosis. *Administration and Policy in Mental Health, 30*(3), 255-266.

Backer, T. (1992). Knowledge utilization: The third wave. *Knowledge: Creation, Diffusion, Utilization, 12,* 225-240.

Backer, T. E., Liberman, R. P., & Kuehnel, T. G. (1986). Dissemination and adoption of innovative psychosocial interventions. *Journal of Consulting and Clinical Psychology, 54,* 111-118.

Baker, S., Gersten, R., & Keating, T. (2000). When less may be more: A 2-year longitudinal evaluation of a volunteer tutoring program requiring minimal training. *Reading Research Quarterly, 35*(4), 494-519.

Barber, K., Barber, M., & Clark, H. B. (1983). Establishing a community-oriented group home and ensuring its survival: A case study of failure. *Analysis and Intervention in Developmental Disabilities, 3*(2-3), 227-238.

Baron, R. L., Watson, D.M., Coughlin, D.D., Fixsen, D.L., & Phillips, E.L. (1979). *The Program Manager Training Manual.* Boys Town, NE: Father Flanagan's Boys' Home.

Bauman, L. J., Stein, R. E. K., & Ireys, H. T. (1991). Reinventing fidelity: The transfer of social technology among settings. *American Journal of Community Psychology, 19,* 619-639.

Bedlington, M., Booth, C., Fixsen, D., & Leavitt, S. (1996). *Skills for Family and Community Living: A Guidebook for Practitioners.* Federal Way, WA: Behavioral Sciences Institute.

Bedlington, M. M., Braukmann, C. J., Kirigin, K. A., & Wolf, M. M. (1979). *Treatment interactions, delinquency, and youth satisfaction.* Paper presented at the American Association of Behavior Therapy, San Francisco, CA.

Bedlington, M. M., Braukmann, C. J., Kirigin Ramp, K. A., & Wolf, M. M. (1988). A comparison of treatment environments in community-based group homes for adolescent offenders. *Criminal Justice and Behavior, 15,* 349-363.

Bedlington, M. M., Solnick, J. V., Schumaker, J. B., Braukmann, C. J., Kirigin, K. A., & Wolf, M. M. (1978). *Evaluating group homes: The relationship between parenting behaviors and delinquency.* Paper presented at the American Psychological Association Convention, Toronto, Canada.

Beer, M., Eisenstat, R. A., & Spector, B. (1990). Why Change Programs Don't Produce Change. *Harvard Business Review, 68*(6), 158-166.

Bernfeld, G. A. (2001). The struggle for treatment integrity in a "dis-integrated" service delivery system. In G. A. Bernfeld, D. P. Farrington & A. W. Leschied (Eds.), *Offender rehabilitation in practice: Implementing and evaluating effective programs* (pp. 167-188). London: Wiley.

Bernfeld, G. A., Blase, K. B., & Fixsen, D. L. (1990). Towards a unified perspective on human service delivery systems: Application of the Teaching-Family Model. In R. J. McMahon & R. D. V. Peters (Eds.), *Behavior Disorders of Adolescents: Research, Intervention and Policy in Clinical and School Settings.* (pp. 191-205). New York: Plenum Press.

Bernfeld, G. A., Farrington, D. P., & Leschied, A. W. (2001). *Offender rehabilitation in practice: Implementing and evaluating effective programs.* New York: John Wiley & Sons, Ltd.

Bero, L., Grilli, R., Grimshaw, J., Harvey, E., Oxman, A., & Thomson, M. A. (1998). Closing The Gap Between Research and Practice – An Overview of Systematic Reviews of Interventions to Promote Implementation of Research Findings by Health Professionals. In A. Haines & A. Donald (Eds.), *Getting Research Findings into Practice.* (pp. 27-35). London: British Medical Journal Books.

Beutler, L. E. (2000). David and Goliath - When empirical and clinical standards of practice meet. *American Psychologist, 55*(9), 997-1007.

Beyer, J. M., & Trice, H. M. (1982). The Utilization Process: A Conceptual Framework and Synthesis of Empirical Findings. *Administrative Science Quarterly, 27*(4), 591-622.

Bickman, L., Guthrie, P., Foster, E. M., Lambert, E. W., Summerfelt, W. T., Breda, C., et al. (1995). *Evaluating Managed Mental Health Services: The Fort Bragg Experiment.* New York, NY: Plenum Press.

Bierman, K. L., Coie, J. D., Dodge, K. A., Greenberg, M. T., Lochman, J. E., McMahon, R. J., et al. (2002). The implementation of the Fast Track Program: An example of a large-scale prevention science efficacy trial. *Journal of Abnormal Child Psychology, 30*(1), 1-17.

Blase, K. A., & Fixsen, D.L. (1981). Structure of child care education: Issues and implications for educators and practitioners. *Child Care Quarterly Special Issue: Emerging Issues in Child and Youth Care Education, 10,* 210-225.

Blase, K. A., & Fixsen, D. L. (2003). *Evidence-Based Programs and Cultural Competence.* Tampa, FL: National Implementation Research Network, Louis de la Parte Florida Mental Health Institute, University of South Florida.

Blase, K. A., Fixsen, D. L., & Phillips, E. L. (1984). Residential treatment for troubled children: Developing service delivery systems. In S. C. Paine, G. T. Bellamy & B. Wilcox (Eds.), *Human services that work: From innovation to standard practice* (pp. 149-165). Baltimore, MD: Paul H. Brookes Publishing.

Bond, G. R., Becker, D. R., Drake, R. E., Rapp, C. A., Meisler, N., Lehman, A. F., et al. (2001). Implementing supported employment as an evidence-based practice. *Psychiatric Services, 52*(3), 313-322.

Bond, G. R., Becker, D. R., Drake, R. E., & Vogler, K. M. (1997). A fidelity scale for the Individual Placement and Support model of supported employment. *Rehabilitation Counseling Bulletin, 40,* 265-284.

Bond, G. R., Drake, R. E., Mueser, K. T., & Becker, D. R. (1997). An update on supported employment for people with severe mental illness. *Psychiatric Services, 48,* 335-347.

Bond, G. R., Evans, L., Salyers, M. P., Williams, J., & Kim, H.-W. (2000). Measurement of Fidelity in Psychiatric Rehabilitation. *Mental Health Services Research, 2*(2), 75-87.

Bond, G. R., Miller, L. D., Krumwied, R. D., & Ward, R. S. (1988). Assertive case management in three CMHCs: A controlled study. *Hospital and Community Psychiatry, 39,* 411-418.

Borghi, J., Guinness, L., Ouedraogo, J., & Curtis, V. (2002). Is hygiene promotion cost-effective? A case study in Burkina Faso. *Tropical Medicine & International Health, 7*(11), 960-969.

Borkovec, T. D., Echemendia, R. J., Ragusea, S. A., & Ruiz, M. (2001). The Pennsylvania Practice Research Network and future possibilities for clinically meaningful and scientifically rigorous psychotherapy effectiveness research. *Clinical Psychology-Science and Practice, 8*(2), 155-167.

Braukmann, C. J., & Blase, K. B. (Ed.). (1979). *Teaching-Parent training manual* (2 vols.). Lawrence, KS: University of Kansas Printing Service.

Braukmann, C. J., Fixsen, D. L., Kirigin, K. A., Phillips, E. A., Phillips, E. L., & Wolf, M. M. (1975). Achievement Place: The training and certification of teaching-parents. In W. S. Wood (Ed.), *Issues in evaluating behavior modification* (pp. 131-152). Champaign, IL: Research Press.

Braukmann, C. J., Kirigin-Ramp, K. A., Tigner, D. M., & Wolf, M. M. (1984). The teaching family approach to training group home parents: Training procedures, validation research, and outcome findings. In R. Dangle & R. Polster (Eds.), *Behavioral parent training: Issues in research and practice* (pp. 144-161). New York: Guilford Press.

Braukmann, P. D., Kirigin Ramp, K. A., Braukmann, C. J., Willner, A. G., & Wolf, M. M. (1983). The analysis and training of rationales for child care workers. *Children and Youth Services Review, 5*(2), 177-194.

Brekke, J. S., & Test, M. A. (1992). A model for measuring the implementation of community support programs: Results from three sites. *Community Mental Health Journal, 28,* 227-247.

Brown, B. S., & Flynn, P. M. (2002). The federal role in drug abuse technology transfer: A history and perspective. *Journal of Substance Abuse Treatment, 22,* 245-257.

Bruns, E. J., Burchard, J. D., Suter, J. C., Force, M. D., & Leverentz-Brady, K. (2004). Assessing fidelity to a community-based treatment for youth: The Wraparound Fidelity Index. *Journal of Emotional and Behavioral Disorders, 12,* 69-79.

Bruns, E. J., Henggeler, S., & Burchard, J. D. (2000). Treatment Fidelity in Community-Based Services for Children and Families. In C. Liberton, Newman, C., Kutash, K., & R. Friedman (Ed.), *A System of Care for Children's Mental Health: Expanding the Research Base. Proceedings of the Twelfth Annual Conference.* Tampa, FL: Florida Mental Health Institute Research & Training Center for Children's Mental Health.

Bruns, E. J., Suter, J. C., Burchard, J. D., Leverentz-Brady, K., & Force, M. D. (in press). Fidelity to the Wraparound process and its association with child and family outcomes. *Journal of Child & Family Studies.*

Bruns, E. J., Suter, J. C., Leverentz-Brady, K., & Burchard, J. D. (2004). A national portrait of wraparound implementation. In C. Newman, Liberton, C., Kutash, K. & R. Friedman (Ed.), *A System of Care for Children's Mental Health: Expanding the Research Base. Proceedings of the Sixteenth Annual Conference.* Tampa, FL: Florida Mental Health Institute Research & Training Center for Children's Mental Health.

Bull, S. S., Gillette, C., Glasgow, R. E., & Estabrooks, P. (2003). Work site health promotion research: To what extent can we generalize the results and what is needed to translate research to practice? *Health Education & Behavior, 30*(5), 537-549.

Burchard, J. D., Burchard, S. N., Sewell, R., & VanDenBerg, J. (1993). *One kid at a time: Evaluative case studies and descriptions of the Alaska Youth Initiative demonstration project.* Washington, DC: SAMHSA Center for Mental Health Services.

Burns, B. J. (2000). Prevention, early intervention, and community-based services (Panel 3). In U.S. Public Health Services (Ed.), *Report of the Surgeon General's Conference on Child Mental Health: A national action agenda* (pp. 35-36). Washington, DC: U.S. Public Health Services.

Buston, K., Wight, D., Hart, G., & Scott, S. (2002). Implementation of a teacher-delivered sex education programme: obstacles and facilitating factors. *Health Education Research, 17*(1), 59-72.

Caro, P., & Dervensky, J. L. (1991). Family-Focused Intervention Model: Implementation and Research Findings. *Topics in Early Childhood Special Education, 11*(3), 66-80.

Carpinello, S. E., Rosenberg, L., Stone, J., Schwager, M., & Felton, C. J. (2002). Best Practices: New York State's Campaign to Implement Evidence-Based Practices for People With Serious Mental Disorders. *Psychiatric services, 53*(2), 153-155.

Carr, E. G., Dunlap, G., Horner, R. H., Koegel, R. L., Turnbull, A. P., Sailor, W., et al. (2002). Positive Behavior support: Evolution of an applied science. *Journal of Positive Behavior Interventions, 4*(1), 4-12.

Carroll, K. M., & Rounsaville, B. J. (2003). Bridging the Gap: A Hybrid Model to link efficacy and effectiveness research in substance abuse treatment. *Psychiatric Services, 54*(3), 333-339.

Carter, H. (1998). Re-engineering in practice. *Work Study, 47*(4), 135-140.

Castka, P., Bamber, C. J., Sharp, J. M., & Belohoubek, P. (2001). Factors affecting successful implementation of high performance teams. *Team Performance Management, 7*(7), 123-134.

Chamberlain, P. (2003). The Oregon Multidimensional Treatment Foster Care Model: Features, outcomes, and progress in dissemination. *Cognitive and Behavioral Practice, 10,* 303-312.

Chamberlain, P., Moreland, S., & Reid, K. (1992). Enhanced services and stipends for foster parents: Effects on retention rates and outcomes for children. *Child Welfare, 71*(5), 387-401.

Chambless, D. L., & Ollendick, T. H. (2001). Empirically supported psychological interventions: Controversies and evidence. *Annual Review of Psychology, 52,* 685-716.

Chan, P. K. O. (2001). Practising evidence-based medicine: the design and implementation of a multidisciplinary team-driven extubation protocol. *Critical Care, 5*(6), 349-354.

Chase, G. (1979). Implementing a human services program: How hard will it be? *Public Policy, 27,* 385-434.

Chaudhuri, A. (1994). The Diffusion of an Innovation in Indonesia. *Journal of Product and Brand Management, 3*(3), 19-26.

Chen, H. T., & Rossi, P. H. (1983). Evaluating with sense the theory driven approach. *Evaluation Review, 7*(3), 283-302.

Cheung, W. M., & Cheng, Y. C. (1997). The strategies for implementing multilevel self- management in schools. *International Journal of Educational Management, 11*(4), 159-169.

Chibnall, S. (2001). *National Evaluation of the Title V Community Prevention Grants Program.*

Chiles, J. A., Miller, A., Crismon, M. L., Rush, A. J., Krasnoff, A. S., & Shon, S. A. (1999). The Texas Medication Algorithm Project: Development and Implementation of the Schizophrenia Algorithm. *Psychiatric Services, 50,* 69-74.

Chilvers, R. (2002). Evidence into practice - Application of psychological models of change in evidence-based implementation. *British Journal of Psychiatry, 181,* 99-101.

Chorpita, B. F., Yim, L. M., & Dondervoet, J. C. (2002). Toward large-scale implementation of empirically supported treatments for children: A review and observations by the Hawaii Empirical Basis to Services Task Force. *Clinical Psychology, 9,* 165-190.

Chuang, W. C., & Crismon, M. L. (2003). Evaluation of a schizophrenia medication algorithm in a state hospital. *American Journal of Health-System Pharmacy, 60*(14), 1459-1467.

Clark, J. A. (1991). Bringing Social Structure back into Clinical Decision-making. *Social Science in Medicine, 38*(2), 853-866.

Cleaver, H., & Walker, S. (2004). From policy to practice: the implementation of a new framework for social work assessments of children and families. *Child and Family Social Work, 9*(1), 81-90.

Cohen, D. A., Farley, T. A., Bedimo-Etame, J. R., Scribner, R., Ward, W., Kendal, C., et al. (1999). Implementation of condom social marketing in Louisiana, 1993 to 1996. *American Journal of Public Health, 89*(2), 204-208.

Collins, S. R., Brooks, L.E., Daly, D.L., Fixsen, D.L., Maloney, D.M., & Blase, K. A. (1976). *An Evaluation of the Teaching-Interaction Component of Family-Living Teacher Training Workshops at Boys Town.* Boys Town, Nebraska: Father Flanagan's Boys' Home.

Collins, S. R., Brooks, L.E., Fixsen, D.L., Maloney, D.M., & Blase, K. A. (1976). *Training Manual for Observers Scoring Pre/Post Teaching Interaction Sequences.* Boys Town, Nebraska: Father Flanagan's Boys' Home.

Colyer, H., & Kamath, P. (1999). Evidence-based practice. A philosophical and political analysis: some matters for consideration by professional practitioners. *Journal of Advanced Nursing, 29*(1), 188-193.

Comtois, K. A. (2002). A review of interventions to reduce the prevalence of parasuicide. *Psychiatric Services, 53*(9), 1138-1144.

Connell, D. B., Turner, R. R., & Mason, E. F. (1985). Summary of findings of the school health education evaluation: Health promotion effectiveness, implementation, and costs. *Journal of School Health, 55*(8), 316-321.

Connell, J. P., Gambone, M. A., & Smith, T. J. (2000). *Youth Development in Community Settings: Challenges to Our Field and Our Approach.* Philadelphia, PA.

Connis, R. T., Braukmann, C. J., Kifer, R. E., Fixsen, D. L., Phillips, E. L., & Wolf, M. M. (1979). Work environment in relation to employment job satisfaction in group homes for youths. *Child Care Quarterly, 8,* 126-142.

Conrad, K. J., & Roberts-Gray, C. (1988). Evaluating program environments. *New directions for program evaluation (Vol. 40).* San Francisco: Jossey-Bass.

Corrigan, P. W. (2001). Strategies for disseminating evidence-based practices to staff who treat people with serious mental illness. *Psychiatric Services, 52*(12), 1598-1606.

Corrigan, P. W., & Boyle, M. G. (2003). What works for mental health system change: Evolution or revolution? *Administration and Policy in Mental Health, 30*(5), 379-395.

Crosby, B. L. (1991). Stakeholder Analysis: A Vital Tool for Strategic Managers. *Implementing Policy Change: Technical Notes(2),* 1-6.

Cunningham, P. B., & Henggeler, S. W. (2001). Implementation of an empirically based drug and violence prevention and intervention program in public school settings. *Journal of Clinical Child Psychology, 30*(2), 221-232.

Currie, V., & Harvey, G. (2000). The use of care pathways as tools to support the implementation of evidence-based practice. *Journal of Interprofessional Care, 14*(4), 311-324.

Dale, N., Baker, A. J. L., & Racine, D. (2002). *Lessons Learned: What the WAY Program Can Teach Us About Program Replication.* Washington, DC: American Youth Policy Forum.

Daly, P. B., Wineman, J. H., Daly, D. L., & Luger, R. (1982). Evaluation of staff performance. In A. J. McSweeney, W. J. Fremouw & R. P. Hawkins (Eds.), *Practical Program Evaluation in Youth Treatment.* Springfield, IL: Charles C. Thomas.

Dancer, D., Braukmann, C. J., Schumaker, J., Kirigin, K. A., Willner, A. G., & Wolf, M. M. (1978). The training and validation of behavior observation and description skills. *Behavior Modification, 2*(1), 113-134.

Dane, A. V., & Schneider, B. H. (1998). Program integrity in primary and early secondary prevention: Are implementation effects out of control? *Clinical Psychology Review, 18*(1), 23-45.

Dansereau, D. F., & Dees, S. M. (2002). Mapping training: The transfer of a cognitive technology for improving counseling. *Journal of Substance Abuse Treatment, 22,* 219-230.

Davis, D. A. (1995). Changing physician performance: A systematic review of the effect of continuing medical education strategies. *Journal of the American Medical Association, 274*(9), 700-705.

Davis, M., Fixsen, D.L., Gruber, K.J., Daly, P.B., Braukmann, C.J., & Wolf, M.M. (1983). Procedures for developing training programs in large-scale settings. *Children and Youth Services Review, 5*(2), 155-176.

Davis, M., Warfel, D.J., Fixsen, D.L., Maloney, D.M., & Blase, K. B. (1978). *Professional Evaluation of a Teaching-Family Group Home: A Procedure Manual* (Rev., 1979 ed.). Boys Town, Nebraska: Father Flanagan's Boys' Home.

Davis, M., Warfel, D.J., Maloney, D.M., Blase, K. B., & Fixsen, D.L. (1979). *Consumer Evaluation Manual: How to Assess Consumer Attitudes Towards Group Homes* (Second ed.). Boys Town, Nebraska: Father Flanagan's Boys' Town.

DeBattista, C., Trivedi, M. H., Kern, J. K., & Lembke, A. (2002). The status of evidence-based guidelines and algorithms in the treatment of depression. *Psychiatric Annals, 32*(11), 658-663.

Deci, P. A., Santos, A. B., Hiott, D. E. W., Schoenwald, S., & Diaz, J. K. (1995). Dissemination of assertive community treatment programs. *Psychiatric Services, 46,* 676-687.

Dennis, M., Perl, H., Huebner, R., & McLellan, A. T. (2000). Twenty-five strategies for improving the design, implementation and analysis of health services research related to alcohol and other drug abuse treatment. *Addiction, 95*(11, Supplement 3), 281-308.

Denton, C. A., Vaughn, S., & Fletcher, J. M. (2003). Bringing research-based practice in reading intervention to scale. *Learning Disabilities Research & Practice, 18*(3), 201-211.

Dewan, N. A., Conley, D., Svendsen, D., Shon, S. P., Staup, J. R., Miller, A. L., et al. (2003). A Quality Improvement Process for Implementing the Texas Algorithm for Schizophrenia in Ohio. *Psychiatric Services, 54*(12), 1646-1649.

Deyle, R. E., & Smith, R. A. (1998). Local government compliance with state planning mandates - The effects of state implementation in Florida. *Journal of the American Planning Association, 64*(4), 457-469.

Diamond, G., Godley, S. H., Liddle, H. A., Sampl, S., Webb, C., Tims, F. M., et al. (2002). Five outpatient treatment models for adolescent marijuana use: a description of the Cannabis Youth Treatment Interventions. *Addiction, 97*(s1), 70-83.

Diebold, C. T., Miller, G., Gensheimer, L. K., & Ohmart, H. (2000). Building an Intervention: A Theoretical and Practical Infrastructure for Planning, Implementing, and Evaluating a Metropolitan-Wide School-To-Career Initiative. *Journal of Educational and Psychological Consultation, 11*(1), 147-172.

Dissemination Working Group. (1999). *Common elements of developing and implementing program models,* Calgary, Alberta: FYI Consulting Ltd.

Dixon, L., Lyles, A., Scott, J., Lehman, A., Postrado, L., Goldman, H., et al. (1999). Services to families of adults with schizophrenia: from treatment recommendations to dissemination. *Psychiatric Services, 50*(2), 233-238.

Dobson, D., & Cook, T. J. (1980). Avoiding type III errors in program evaluation: results from a field experiment. *Evaluation and Program Planning, 3,* 269-376.

Domitrovich, C. E., & Greenberg, M. T. (2000). The study of implementation: Current findings from effective programs that prevent mental disorders in school-aged children. *Journal of Educational and Psychological Consultation, 11*(2), 193-221.

Drake, R. E., Essock, S. M., Shaner, A., Carey, R. B., Minkoff, K., Kola, L., et al. (2001). Implementing dual diagnosis services for clients with severe mental illness. *Psychiatric Services, 52*(4), 469-476.

Drake, R. E., Gorman, P., & Torrey, W. C. (2002). *Implementing adult "tool kits" in mental health.* Paper presented at the NASMHPD Conference on EBPs and Adult Mental Health, Tampa, FL.

Dreisbach, L., & Smart, D. J. (1980). *The preservice workshop producer's manual.* Boys Town, Nebraska: Father Flanagan's Boys' Home.

Dreisbach, L., Luger, R., Ritter, D., & Smart, D. J. (1979). *The confederate role workshop: Trainer's manual.* Boys Town, Nebraska: Father Flanagan's Boys' Home.

Dusenbury, L., Brannigan, R., Falco, M., & Hansen, W. B. (2003). A review of research on fidelity of implementation: implications for drug abuse prevention in school settings. *Health Education Research, 18*(2), 237-256.

Edwards, D. L., Schoenwald, S. K., Henggeler, S. W., & Strother, K. B. (2001). A multi-level perspective on the implementation of multisystemic therapy (MST): Attempting dissemination with fidelity. In G. A. Bernfeld, D. Farrington & A. W. Lescheid (Eds.), *Offender rehabilitation in practice: Implementing and evaluating effective programs.* New York: John Wiley & Sons Ltd.

Edwards, R. W., Jumper-Thurman, P., Plested, B. A., Oetting, E. R., & Swanson, L. (2000). Community readiness: Research to practice. *Journal of Community Psychology, 28*(3), 291-307.

Elliott, D. S. (1997). Implementing and evaluating crime prevention and control programs and policies. *Crime Law and Social Change, 28*(3-4), 287-310.

Elliott, D. S., & Mihalic, S. (2004). Issues in Disseminating and Replicating Effective Prevention Programs. *Prevention Science, 5*(1), 47-52.

Ellis, P., Robinson, P., Ciliska, D., Armour, T., Raina, P., Brouwers, M., et al. (2003). *Diffusion and Dissemination of Evidence-Based Cancer Control Interventions.* Evidence Report /Technology Assessment Number 79. (Prepared by Oregon Health and Science University under Contract No. 290-97-0017.) AHRQ Publication No. 03-E033). Rockville, MD: Agency for Healthcare Research and Quality.

Embry, D. D. (2002). The good behavior game: A best practice candidate as a universal behavioral vaccine. *Clinical Child and Family Psychology Review, 5*(4), 273-297.

Embry, D. D. (2004). Community-based prevention using simple, low-cost, evidence-based kernels and behavior vaccines. *Journal of Community Psychology, 32*(5), 575-591.

Embry, D. D., Biglan, A., Galloway, D., McDaniel, R., Nunez, N., Dahl, M., et al. (2004). *Evaluation of reward and reminder visits to reduce tobacco sales to young people: A multiple-baseline across two states.* Tucson, AZ: PAXIS Institute.

Ennett, S. T., Tobler, N. S., Ringwalt, C. L., & Flewelling, R. L. (1994). How effective is drug abuse resistance education? A meta-analysis of Project DARE outcome evaluations. *American Journal of Public Health, 84*(9), 1394-1401.

Epstein, M., Jayanthi, M., McKelvey, J., Frankenberry, E., Hary, R., Potter, K., et al. (1998). Reliability of the Wraparound Observation Form: An instrument to measure the Wraparound process. *Journal of Child and Family Studies, 7,* 161-170.

Fagan, A. A., & Mihalic, S. (2003). Strategies for Enhancing the Adoption of School-Based Prevention Programs: Lessons Learned from the Blueprints for Violence Prevention Replications of the Life Skills Training Program. *Journal of Community Psychology, 31*(3), 235-253.

Faggin, F. (1985). The challenge of bringing new ideas to market. *High Technology,* 14-16.

Fairweather, G. W., Sanders, D. H., & Tornatzky, L. G. (1974). The essential conditions for activating adoption. In *Creating change in mental health organizations* (pp. 137-161). Elmsford, NY: Pergamon Press.

Fairweather, G. W., Sanders, D. H., & Tornatzky, L. G. (1974a). Principles for Creating Change in Mental Health Organizations. In *Creating change in mental health organizations* (pp. 181-197). Elmsford, NY: Pergamon Press.

Fairweather, G. W., Sanders, D. H., & Tornatzky, L. G. (1974b). Follow-up Diffusion of the Community Lodge. In *Creating change in mental health organizations* (pp. 162-180). Elmsford, NY: Pergamon Press.

Fawcett, S. B., Seekins, T., & Braukmann, C. J. (1981). Developing and transferring behavioral technologies for children and youth. *Children and Youth Services Review, 3,* 219-242.

Feldman, R. A., Caplinger, T. E., & Wodarski, J. S. (1983). *The St. Louis Conundrum: The Effective Treatment of Antisocial Youths.* Englewood Cliffs, NJ: Prentice-Hall, Inc.

Feldman, S., Baler, S., & Penner, S. (1997). The role of private-for-profit managed behavioral health in the public sector. *Administration and Policy in Mental Health, 24,* 379-390.

Felner, R. D. (1997). The Project on High Performance Learning Communities: Applying the land-grant model to school reform. *Journal of School Psychology, 78*(7), 520-528.

Felner, R. D., Favazza, A., Shim, M., Brand, S., Gu, K., & Noonan, N. (2001). Whole school improvement and restructuring as prevention and promotion – Lessons from STEP and the project on high performance learning communities. *Journal of School Psychology, 39*(2), 177-202.

Fine, M. J., Stone, R. A., Lave, J. R., Hough, L. J., Obrosky, D. S., Mor, M. K., et al. (2003). Implementation of an evidence-based guideline to reduce duration of intravenous antibiotic therapy and length of stay for patients hospitalized with community-acquired pneumonia: a randomized controlled trial. *The American Journal of Medicine, 115*(5), 343-351.

Fisher, D. (1983). The going gets tough when we descend from the ivory tower. *Analysis and Intervention in Developmental Disabilities, 3*(2-3), 249-255.

Fisher, P. A., & Chamberlain, P. (2000). Multidimensional treatment foster care: A program for intensive parenting, family support, and skill building. *Journal of Emotional and Behavioral Disorders, 8*(3), 155-164.

Fitzgerald, L., Ferlie, E., & Hawkins, C. (2003). Innovation in healthcare: how does credible evidence influence professionals? *Health & Social Care in the Community, 11*(3), 219.

Fixsen, D. L., & Blase, K. A. (1996). *An interview package for selecting family specialists for homebased treatment programs.* Calgary, Alberta: FYI Consulting, Ltd.

Fixsen, D. L., & Blase, K. A. (1992). *Elements of the Teaching-Family Model.* Asheville, NC: Teaching-Family Association Newsletter, Teaching-Family Association.

Fixsen, D. L., & Blase, K. A. (1993). Creating new realities: Program development and dissemination. *Journal of Applied Behavior Analysis, 26,* 597-615.

Fixsen, D. L., Blase, K. A., Timbers, G. D., & Wolf, M. M. (2001). In search of program implementation: 792 replications of the Teaching-Family Model. In G. A. Bernfeld, D. P. Farrington & A. W. Leschied (Eds.), *Offender rehabilitation in practice: Implementing and evaluating effective programs* (pp. 149-166). London: Wiley.

Fixsen, D. L., Blase, K.A., O'Kane, S., & Weber, D. (1982). *Boys Town Regional Site Assessment and Selection: Development Activities, Development Cost and Affiliation Agreement.* Boys Town, NE: Father Flanagan's Boys' Home.

Fixsen, D. L., Phillips, E. L., & Wolf, M. M. (1978). Mission-oriented behavior research: The Teaching-Family Model. In A. C. Catania & T. A. Brigham (Eds.), *Handbook of applied behavior analysis: Social and instructional processes* (pp. 603-628). New York: Irvington Publishers, Inc.

Fixsen, D. L., Phillips, E.L., Baron, R.L., Coughlin, D.D., Daly, D.L., & Daly, P.B. (1978). The Boys Town Revolution. *Human Nature, 1,* 54-61.

Flanagan, S. G., Cray, M. E., & Van Meter, D. (1983). A facility-wide consultation and training team as a catalyst in promoting institutional change. *Analysis and Intervention in Developmental Disabilities, 3*(2-3), 151-169.

Fleuren, M., Wiefferink, K., & Paulussen, T. (2004). Determinants of innovation within health care organizations: Literature review and Delphi study. *International Journal of Quality Health Care, 16*(2), 107-123.

Flocks, J., Clarke, L., Albrecht, S., Bryant, C., Monaghan, P., & Baker, H. (2001). Implementing a community-based social marketing project to improve agricultural worker health. *Enviornmental Health Perspectives, 109*(3), 461-468.

Forgatch, M. S., Patterson, G. R., & DeGarmo, D. S. (in press). Evaluating Fidelity: Predictive Validity for a Measure of Competent Adherence to the Oregon Model of Parent Management Training. *Behavior Therapy.*

Forsetlund, L., Talseth, K. O., Bradley, P., Nordheim, L., & Bjorndal, A. (2003). Many a slip between cup and lip: Process evaluation of a program to promote and support evidence-based public health practice. *Evaluation Review, 27*(2), 179-209.

Forthman, M. T., Wooster, L. D., Hill, W. C., Homa-Lowry, J. M., & DesHarnais, S. I. (2003). Insights into successful change management: empirically supported techniques for improving medical practice patterns. *American Journal of Med Qual, 18*(5), 181-189.

Fox, J., & Gershman, J. (2000). The World Bank and Social Capital: Lessons from Ten Rural Development Projects in the Philippines and Mexico. *Policy Sciences, 33*(3-4), 399-419.

Freeman, M. H., Fabry, B. D., & Blase, K. A. (Eds.). (1982). *Evaluation training manual: A handbook for professional evaluators.* Boys Town, Nebraska: Father Flanagan's Boys' Home.

Freemantle, N., & Watt, I. (1994). Dissemination: Implementing the findings of research. *Health Libraries Review, 11,* 133-137.

Fuchs, L. S., Fuchs, D., Yazdian, L., & Powell, S. R. (2002). Enhancing first-grade children's mathematical development with Peer-Assisted Learning Strategies. *School Psychology Review, 31*(4), 569-583.

Gallagher, K. (2001). *Bringing Research to Scale: The Nurse-Family Partnership Program.* Denver, CO: The Colorado Trust.

Ganju, V. (2003). Implementation of evidence-based practices in state mental health systems: Implications for research and effectiveness studies. *Schizophrenia Bulletin, 29*(1), 125-131.

Gendreau, P., Goggin, C., & Smith, P. (1999). The forgotten issue in effective correctional treatment: Program implementation. *International Journal of Offender Therapy and Comparative Criminology, 43*(2), 180-187.

Gersten, R., Chard, D., & Baker, S. (2000). Factors enhancing sustained use of research-based instructional practices. *Journal of Learning Disabilities, 33,* 445-457.

Gilliam, W. S., Ripple, C. H., Zigler, E. F., & Leiter, V. (2000). Evaluating child and family demonstration initiatives: Lessons from the Comprehensive Child Development Program. *Early Childhood Research Quarterly, 15*(1), 41-59.

Gingiss, P. L. (1992). Enhancing program implementation and maintenance through a multiphase approach to peer-based staff development. *Journal of School Health, 62*(5), 161-166.

Gleick, J. (1987). *Chaos: Making a new science.* Harmondsworth, Middlesex: Penguin Books, Ltd.

Glisson, C., & Hemmelgarn, A. (1998). The effects of organizational climate and interorganizational coordination on the quality and outcomes of children's service systems. *Child Abuse and Neglect, 22,* 401-421.

Goggin, M. L. (1986). The "Too Few Cases/Too Many Variables" Problem in Implementation Research. *The Western Political Quarterly, 39*(2), 328-347.

Goldman, H. H., Ganju, V., Drake, R. E., Gorman, P., Hogan, M., Hyde, P. S., et al. (2001). Policy implications for implementing evidence-based practices. *Psychiatric Services, 52,* 1591-1597.

Goodman, R. M. (2000). Bridging the gap in effective program implementation: From concept to application. *Journal of Community Psychology, 28*(3), 309-321.

Goodman, R. M., Wheeler, F. C., & Lee, P. R. (1995). Evaluation of the Heart to Heart Project - Lessons from a Community-Based Chronic Disease Prevention Project. *American Journal of Health Promotion, 9*(6), 443-455.

Gottfredson, D. C., & Gottfredson, G. D. (2002). Quality of school-based prevention programs: Results from a national survey. *Journal of Research in Crime and Delinquency, 39*(1), 3-35.

Gray, D. O., Jakes, S. S., Emshoff, J., & Blakely, C. (2003). ESID, dissemination, and community psychology: A case of partial implementation? *American Journal of Community Psychology, 32*(3-4), 359-370.

Green, T. (1980). *Predicting the behavior of the educational system.* Syracuse, New York: Syracuse University Press.

Greenhalgh, T., Robert, G., MacFarlane, F., Bate, P., & Kyriakidou, O. (2004). Diffusion of innovations in service organizations: Systematic review and recommendations. *The Milbank Quarterly, 82*(4), 581-629.

Greenwood, C. R. (2003). A building-based case study of evidence-based literacy practices: Implementation, reading behavior, and growth in reading fluency, K-4. *Journal of Special Education, 37*(2), 95-110.

Gresham, F. M., Gansle, K. A., & Noell, G. H. (1993). Treatment Integrity in Applied Behavior Analysis with Children. *Journal of Applied Behavior Analysis, 26*(2), 257-263.

Hahn, E. J., Noland, M. P., Rayens, M. K., & Christie, D. M. (2002). Efficacy of training and fidelity of implementation of the Life Skills Training Program. *Journal of School Health, 72*(7), 282-287.

Harachi, T. W., Abbott, R. D., Catalano, R. F., Haggerty, K. P., & Fleming, C. (1999). Opening the black box: Using process evaluation measures to assess implementation and theory building. *American Journal of Community Psychology, 27*(5), 715-735.

Harchik, A. E., Sherman, J A., Sheldon, J. B., & Strouse, M. C. (1992). Ongoing consultation as a method of improving performance of staff members in a group home. *Journal of Applied Behavior Analysis, 25,* 599-610.

Havelock, R. G., & Havelock, M. C. (1973). *Training for change agents.* Ann Arbor, MI: University of Michigan Institute for Social Research.

Heller, C. (2001). Implementing change – It's as hard as it looks. *Disease Management & Health Outcomes, 9*(10), 551-563.

Henggeler, S. W., & Borduin, C. M. (1990). *Family therapy and beyond: A multisystemic approach to treating the behavior problems of children and adolescents.* Pacific Grove, CA: Brooks/Cole.

Henggeler, S. W., Melton, G. B., Brondino, M. J., Scherer, D. G., & Hanley, J. H. (1997). Multisystemic therapy with violent and chronic juvenile offenders and their families: The role of treatment fidelity in successful dissemination. *Journal of Consulting and Clinical Psychology, 65*(5), 821-833.

Henggeler, S. W., Pickrel, S. G., & Brondino, M. J. (1999). Multisystemic treatment of substance-abusing and -dependent delinquents: Outcomes, treatment fidelity, and transportability. *Mental Health Services Research, 1*(3), 171-184.

Henggeler, S. W., Pickrel, S. G., Brondino, M. J., Ward, D. M., & Rowland, M. D. (1997). *Service Utilization Tracking Form II.* Charleston, SC: Department of Psychiatry and Behavioral Sciences, Medical University of South Carolina.

Henggeler, S. W., Rowland, M. D., Pickrel, S. G., Miller, S. L., Cunningham, P. B., Santos, A. B., et al. (1997). Investigating family-based alternatives to institution-based mental health services for youth: Lessons learned from the pilot study of a randomized field trial. *Journal of Clinical Child Psychology, 26,* 226-233.

Henggeler, S. W., Schoenwald, S. K., Borduin, C. M., Rowland, M. D., & Cunningham, P. B. (1998). *Multisystemic treatment for antisocial behavior in children and adolescents.* New York: Guilford Press.

Hernandez, M., & Hodges, S. (2003). Building upon the theory of change for systems of care. *Journal of Emotional and Behavioral Disorders, 11*(1), 19-26.

Hernandez, M., & Hodges, S. (2003). *Crafting Logic Models for Systems of Care: Ideas Into Action.* Tampa, FL: University of South Florida, The Louis de la Parte Florida Mental Health Institute, Department of Child and Family Studies.

Hodges, K., & Wotring, J. (2004). The Role of Monitoring Outcomes in Initiating Implementation of Evidence-Based Treatments at the State Level. *Psychiatric Services, 55*(4), 396-400.

Hodges, K., Xue, Y., & Wotring, J. (2004). Outcomes for children with problematic behavior in school and at home served by public mental health. *Journal of Emotional and Behavioral Disorders, 12*(2), 109-119.

Hodges, K., Xue, Y., & Wotring, J. (2004). Use of the CAFAS to evaluate outcomes for youths with severe emotional disturbance served by public mental health. *Journal of Child and Family Studies, 13*(3), 325-339.

Hodges, S., Hernandez, M., Nesman, T., & Lipien, L. (2002). Creating Change and Keeping it Real: How Excellent Child-serving Organizations Carry Out Their Goals. *Cross-site Findings for Phase I Community-Based Theories of Change.* Tampa: Louis de la Parte Florida Mental Health Institute, Research and Training Center for Children's Mental Health, University of South Florida.

Hollin, C., & McMurran, M. (2001). Series editors' preface. In G. A. Bernfeld, D. P. Farrington & A. W. Leschied (Eds.), *Offender rehabilitation in practice: Implementing and evaluating effective programs* (pp. xv-xviii). London: Wiley.

Huber, T. P., Godfrey, M. M., Nelson, E. C., Mohr, J. J., Campbell, C., & Batalden, P. B. (2003). Microsystems in health care: Part 8. Developing people and improving work life: what front-line staff told us. *Joint Commission Journal on Quality and Safety, 29*(10), 512-522.

Huey, S. J., Henggeler, S. W., Brondino, M. J., & Pickrel, S. G. (2000). Mechanisms of change in multisystemic therapy: Reducing delinquent behavior through therapist adherence and improved family and peer functioning. *Journal of Consulting and Clinical Psychology, 68*(3), 451-467.

Hyde, P. S., Falls, K., Morris, J. A., & Schoenwald, S. K. (2003). *Turning Knowledge into Practice.* The Technical Assistance Collaborative, Inc.

Institute of Medicine. (2000). *To err is human: Building a safer health system.* I. Kohn, J. Corrigan, M. Donaldson (eds.): Washington, DC: National Academies Press.

Institute of Medicine - Committee on Quality of Health Care in America. (2001). *Crossing the quality chasm: A new health system for the 21st century.* Washington, D.C.: National Academy Press.

James Bell Associates. (1999). *Family preservation and family support (FP/FS) services implementation study: Interim Report.* Arlington, VA: James Bell Associates.

Joyce, B., & Showers, B. (2002). *Student Achievement Through Staff Development (3rd ed.).* Alexandria, VA: Association for Supervision and Curriculum Development.

Kalafat, J., & Ryerson, D. M. (1999). The Implementation and Institutionalization of a School-Based Youth Suicide Prevention Program. *Journal of Primary Prevention, 19*(3), 157-175.

Kasul, R. A., & Motwani, J. G. (1997). Successful implementation of TPS in a manufacturing setting: a case study. *Industrial Management and Data Systems, 97*(7), 274-279.

Kavanagh, D. J., Spence, S. H., Strong, J., Wilson, J., Sturk, H., & Crow, N. (2003). Supervision Practices in Allied Mental Health: Relationships of Supervision Characteristics to Perceived Impact and Job Satisfaction. *Mental Health Services Research, 5*(4), 187-195.

Kazdin, A. E. (1982). *Single-case research designs: Methods for clinical and applied settings.* New York: Oxford University Press.

Kealey, K. A., Peterson, A. V., Jr., Gaul, M. A., & Dinh, K. T. (2000). Teacher Training as a Behavior Change Process: Principles and Results From a Longitudinal Study. *Health Education & Behavior, 27*(1), 64-81.

Kelly, J. A., Somlai, A. M., DiFranceisco, W. J., Otto-Salaj, L. L., McAuliffe, T. L., Hackl, K. L., et al. (2000). Bridging the gap between the science and service of HIV prevention: Transferring effective research-based HIV prevention interventions to community AIDS service providers. *American Journal of Public Health, 90*(7), 1082-1088.

Khatri, G. R., & Frieden, T. R. (2002). Rapid DOTS expansion in India. *Bulletin of the World Health Organization, 80*(6), 457-463.

Kidder, T. (2003). *Mountains beyond mountains: The quest of Dr. Paul Farmer, a man who would cure the world.* New York: Random House.

Kirigin, K. A., Ayala, H. E., Braukmann, C. J., Brown, W. G., Minkin, N., Fixsen, D. L., et al. (1975). Training Teaching-Parents: An evaluation of workshop training procedures. In E. Ramp & G. Semb (Eds.), *Behavior analysis: Areas of research and application* (pp. 161-174). Englewood Cliffs, N. J.: Prentice-Hall.

Kirigin, K. A., Braukmann, C. J., Atwater, J. D., & Wolf, M. M. (1982). An evaluation of Teaching-Family (Achievement Place) group homes for juvenile offenders. *Journal of Applied Behavior Analysis, 15*(1), 1-16.

Kirigin, K. A., & Fixsen, D. L. (1974). *The Evaluation of Six Group Homes in Kansas.* Topeka, KS: Kansas Governor's Committee on Criminal Administration.

Kirigin, K. A., Fixsen, D.L., & Wolf, M.M. (1974). *An Evaluation of Fourteen Community-Based Programs in Kansas.* Topeka, KS: Kansas Department of Social and Rehabilitation Services.

Kirigin, K. A., Wolf, M. M., Braukmann, C. J., Fixsen, D. L., & Phillips, E. L. (1979). Achievement Place: A preliminary outcome evaluation. In J. S. Stumphouzer (Ed.), *Progress in behavior therapy with delinquents* (pp. 118-145). Springfield, IL: Charles C. Thomas.

Kirkwood, R., Smith, S., & Tranfield, D. (1989). The Implementation Cube for Advanced Manufacturing Systems. *International Journal of Operations and Production Management, 9*(8), 0-0.

Kitson, A., Harvey, G., & McCormack, B. (1998). Enabling the implementation of evidence based practice: a conceptual framework. *Quality in Health Care, 7*(3), 149-158.

Klem, A. M. (2000). You Can Get There From Here: Using a Theory of Change Approach to Plan Urban Education Reform. *Journal of Educational and Psychological Consultation, 11*(1), 93-120.

Klingner, J. K., Ahwee, S., Pilonieta, P., & Menendez, R. (2003). Barriers and Facilitators in Scaling Up Research-Based Practices. *Exceptional Children, 69*(4), 411-429.

Korfmacher, J., Kitzman, H. J., & Olds, D. L. (1998). Intervention processes as predictors of outcomes in a preventive home-visitation program. *Journal of Community Psychology, 26*(1), 49-64.

Korunka, C., Weiss, A., & Karetta, B. (1993). Effects of New Technologies with Special Regard for the Implementation Process per se. *Journal of Organizational Behavior, 14*(4), 331-348.

Kraft, J. M., Mezoff, J. S., Sogolow, E. D., Neumann, M. S., & Thomas, P. A. (2000). A technology transfer model for effective HIV/AIDS interventions: Science and practice. *AIDS Education and Prevention, 12 (Supplement A),* 7-20.

Kutash, K., Duchnowski, A., Sumi, W., Rudo, Z., & Harris, K. (2002). A school, family, and community collaborative program for children who have emotional disturbances. *Journal of Emotional and Behavioral Disorders, 10*(2), 99-107.

Lalley, T. L. (1976). *Research utilization in the social sciences.* Paper presented at the Meeting of the Association for Advancement of Behavior Therapy, New York.

Latessa, E. J. (2003). *The principles of effective intervention: Results and lessons learned from Ohio.* Cincinnati. OH: Center for Criminal Justice Research, University of Cincinnati.

Latham, G. P., & Heslin, P. A. (2003). Training the Trainee as Well as the Trainer: Lessons to be Learned from Clinical Psychology. *Canadian Psychology, 44*(3), 218-231.

Lehman, W. E. K., Greener, J. M., & Simpson, D. D. (2002). Assessing organizational readiness for change. *Journal of Substance Abuse Treatment, 22*(4), 197-209.

Leonard-Barton, D., & Kraus, W. A. (1985). Implementing new technology. *Harvard Business Review, 6,* 102-110.

Leschied, A. W., & Cunningham, A. (2002). *Seeking effective interventions for serious young offenders: Interim results of a four-year randomized study of Multisystemic Therapy in Ontario, Canada.* London, Ontario: Centre for Children and Families in the Justice System.

Lester, J. P., Bowman, A. O., Goggin, M. L., & O'Toole, L. J., Jr. (1987). Public policy implementation: Evolution of the field and agenda for future research. *Policy Studies Review, 7,* 200-216.

Liberman, R. P., Ferris, C., Salgado, P., & Salgado, J. (1975). Replication of Achievement Place model in California. *Journal of Applied Behavior Analysis, 8,* 287-299.

Liddle, H. A., Rowe, C. L., Quille, T. J., Dakof, G. A., Mills, D. S., Sakran, E., et al. (2002). Transporting a research-based adolescent drug treatment into practice. *Journal of Substance Abuse Treatment, 22*(4), 231-243.

Linehan, M. (1991). *Cognitive-Behavioral Treatment of Borderline Personality Disorder.* New York: Guilford Press.

Lonigan, C. J., Elbert, J. C., & Johnson, S. B. (1998). Empirically supported psychological interventions for children: An overview. *Journal of Clinical Child Psychology, 27(Special Issue).*

Lowery, M. (1992). LAMP in L.A.'s skid row: A model for community-based support services. *New Directions for Mental Health Services, 56,* 89-98.

Luger, R., Dreisbach, L., Smart, D. J., & Smart, D. A. (1979). *The role-play leader workshop: Trainer's manual.* Boys Town, Nebraska: Father Flanagan's Boys' Home.

Macallair, D., & Males, M. (2004). A Failure of Good Intentions: An Analysis of Juvenile Justice Reform in San Francisco during the 1990s. *Review of Policy Research, 21*(1), 63-78.

Macias, C., Propst, R., Rodican, C., & Boyd, J. (2001). Strategic Planning for ICCD Clubhouse Implementation: Development of the Clubhouse Research and Evaluation Screening Survey (CRESS). *Mental Health Services Research, 3*(3), 155-167.

Maloney, D., Davis, M. J., Davis, R. S., Harper, D., Harper, T. M., Ford, D., Ford, M. E., Phillips, E. A., Phillips, E. L., Timbers, G. D., Timbers, B. J., Fixsen, D. L., & Wolf, M. M. (1974). Effectiveness of some training procedures for group home staff. In L. A. Larson (Ed.), *Community Residences for the mentally retarded.* Chapel Hill, NC: Developmental Disabilities Technical Assistance System.

Maloney, D. M., Fixsen, D. L., & Phillips, E. L. (1985). Marketing your product: The psychologist as communicator. *American Psychologist, 40,* 961-962.

Maloney, D. M., Phillips, E.L., Fixsen, D.L., & Wolf, M.M. (1975). Training techniques for staff in group homes for juvenile offenders. *Journal of Criminal Justice and Behavior, 2,* 195-216.

Maloney, D. M., Timbers, G. D., & Blase, K. A. (1977). The Bringing It All Back Home project: Regional adaptation of the Teaching-Family Model group home for adolescents. *Child Welfare, 56,* 787-796.

Maloney, D. M., Warfel, D. J., Blase, K. A., Timbers, G. D., Fixsen, D. L., & Phillips, E. L. (1983). A method for validating employment interviews for residential child care workers. *Residential Group Care and Treatment, 1,* 37-50.

Marks, S. U., & Gersten, R. (1998). Engagement and disengagement between special and general educators: An application of Miles and Huberman's cross-case analysis. *Learning Disability Quarterly, 21*(1), 34-56.

Mattesich, P. W., Murray-Close, M., & Monsey, B. R. (2001). *Collaboration: What Makes it Work? (2nd ed.).* St. Paul, MN: The Wilder Foundation.

Maxfield, M., Schirm, A., & Rodriguez-Planas, N. (2003). *The Quantum Opportunity program demonstration: Implementation and short-term impacts.* (No. MPR 8279-093). Washington, DC: Mathematica Policy Research, Inc.

McCarthy, P. (2002). *Personal communication.* Baltimore, MD: Annie E. Casey Foundation.

McClannahan, L. E., Krantz, P. J., McGee, G. G., & MacDuff, G. S. (1984). Teaching-Family Model for autistic children. In W. P. Christian, G. T. Hannah & T. J. Glahn (Eds.), *Programming effective human services* (pp. 383-406). New York: Plenum Press.

McCormick, K. M., & Brennan, S. (2001). Mentoring the new professional in interdisciplinary early childhood education: The Kentucky Teacher Internship Program. *Topics in Early Childhood Special Education, 21*(3), 131-144.

McCormick, L. K., Steckler, A. B., & McLeroy, K. R. (1995). Diffusion of innovations in schools: A study of adoption and implementation of school-based tobacco prevention curricula. *American Journal of Health Promotion, 9*(3), 210-219.

McDaniel, M. A., Whetzel, D. L., Schmidt, F. L., & Maurer, S. D. (1994). The validity of employment interviews: A comprehensive review and meta-analysis. *Journal of Applied Psychology, 79*(4), 599-616.

McDermott, R. (1999a). Knowledge Management – Why Information Technology Inspired But Cannot Deliver Knowledge Management. *California Management Review, 41*(4), 103-117.

McDermott, R. (1999b). Learning across teams: how to build communities of practice in team organizations. *Knowledge Management Review, 8,* 32-36.

McGrew, J. H., Bond, G. R., Dietzen, L., & Salyers, M. (1994). Measuring the Fidelity of Implementation of a Mental Health Program Model. *Journal of Consulting & Clinical Psychology, 62*(4), 670-678.

McGuire, J. (2001). What works in correctional intervention? Evidence and practical implications. In G. A. Bernfeld, D. P. Farrington & A. W. Leschied (Eds.), *Offender rehabilitation in practice: Implementing and evaluating effective programs* (pp. 25-43). London: Wiley.

McHugo, G. J., Drake, R. E., Teague, G. B., & Xie, H. (1999). The relationship between model fidelity and client outcomes in the New Hampshire Dual Disorders Study. *Psychiatric Services, 50*(6), 818-824.

McWhorter, G., Timbers, G., Timbers, B., Jones, R., Ownbey, M., Hussey, M., & Perry, D. (1999). *The Missing Curriculum: Teaching Social Competencies in the Classroom.* Morganton, NC: Bringing It All Back Home: A Study Center of Appalachian State University.

Mellman, T. A., Miller, A. L., Weissman, E. M., Crismon, M. L., Essock, S. M., & Marder, S. R. (2001). Guidelines and algorithms for implementing evidence-based medication treatment. *Psychiatric Services, 52*(5), 619-625.

Mihalic, S., Fagan, A., Irwin, K., Ballard, D., & Elliott, D. (2004). *Blueprints for Violence Prevention.* Washington, DC: U.S. Department of Justice, Office of Justice Programs, Office of Juvenile Justice and Delinquency Prevention.

Mihalic, S., & Irwin, K. (2003). Blueprints for Violence Prevention: From Research to Real-World Settings-Factors Influencing the Successful Replication of Model Programs. *Youth Violence and Juvenile Justice, 1*(4), 307-329.

Milojicic, D. S., Douglis, F., Paindaveine, Y., Wheeler, R., & Zhou, S. N. (2000). Process migration. *Acm Computing Surveys, 32*(3), 241-299.

Mimura, C., & Griffiths, P. (2003). The effectiveness of current approaches to workplace stress management in the nursing profession: an evidence based literature review. *Occupational and Environmental Medicine, 60*(1), 10-15.

Mittman, B. S., Tonesk, X., & Jacobson, P. D. (1992). Implementing Clinical Practice Guidelines: Social Influence Strategies and Practitioner Behavior Change. *Quality Research Bulletin,* 413-421.

Moll, L. C. (1990). *Introduction to Vygotsky and Education: Instructional implications of sociohistorical psychology.* Cambridge: Cambridge University Press.

Moncher, F. J., & Prinz, R. J. (1991). Treatment fidelity in outcome studies. *Clinical Psychology Review, 11,* 247-266.

Morgan, G., & Ramirez, R. (1983). Action learning: A holographic metaphor for guiding social change. *Human Relations, 37,* 19-43.

Morgan, M. J. (1992). Systems Implementation Strategy: Behavioural and Organizational Aspects. *Industrial Management and Data Systems, 92*(8), 88-98.

Morris, J. A., & Stuart, G. W. (2002). Training and education needs of consumers, families, and front-line staff in behavioral health practice. *Administration and Policy in Mental Health, 29*(4/5), 377-402.

Morrissey, J. P., Calloway, M. O., Thakur, N., Cocozza, J., Steadman, H. J., & Dennis, D. (2002). Integration of service systems for homeless persons with serious mental illness through the ACCESS program. *Psychiatric Services, 53*(8), 949-957.

Morton, M. S. S. (1991). *The corporation of the 1990s – Information technology and organizational transformation.* New York: Oxford University Press.

Mowbray, C. T., Holter, M. C., Teague, G. B., & Bybee, D. (2003). Fidelity criteria: Development, measurement, and validation. *American Journal of Evaluation, 24*(3), 315-340.

Mueser, K. T., Torrey, W. C., Lynde, D., Singer, P., & Drake, R. E. (2003). Implementing evidence-based practices for people with severe mental illness. *Behavior Modification, 27*(3), 387-411.

Nathanson, C. A., & Morlock, L. L. (1980). Control structure, values, and innovation: A comparative study of hospitals. *Journal of Health and Social Behavior, 21,* 315-333.

National Advisory Mental Health Council Workgroup on Child and Adolescent Mental Health Intervention Development and Deployment. (2001). *Blueprint for change: Research on child and adolescent mental health.* Washington, DC: National Institute of Mental Health.

National Institute of Mental Health. (1999). *Bridging science and service: A report by the National Advisory Mental Health Council's Clinical Treatment and Services Research Workshop.* Rockville, MD: National Institute of Mental Health.

Neufeld, B., & Roper, D. (2003). *Coaching: A strategy for developing instructional capacity.* Cambridge, MA: Education Matters, Inc.

New Freedom Commission on Mental Health. (2003). *Achieving the promise: Transforming mental health care in America.* Final Report. Rockville, MD: DHHS Pub. No. SMA-03-3832.

Niazi, M., Wilson, D., & Zowghi, D. (2005). A maturity model for the implementation of software process improvement: An empirical study. *Journal of Systems and Software, 74*(2), 155-172.

Nutt, P. C. (1986). Tactics of Implementation. *Academy of Management Journal, 29*(2), 230-261.

O'Connell, M. J., Morris, J. A., & Hoge, M. A. (2004). Innovation in behavioral health workforce education. *Administration and Policy in Mental Health, 32*(2), 131-165.

Odom, S. I., Brown, W. H., Frey, T., Karasu, N., Smith-Canter, L. L., & Strain, P. S. (2003). Evidence-based practices for young children with autism: Contributions of single-subject design research. *Focus on Autism and Other Developmental Disabilities, 18*(3), 166-175.

Odom, S. L., & Strain, P. S. (2002). Evidence-based practice in early intervention/early childhood special education: Single-subject design research. *Journal of Early Intervention, 25*(2), 151-160.

O'Donoghue, J. (2002). Zimbabwe's AIDS action programme for schools. *Evaluation and Program Planning, 25*(4), 387-396.

Ogden, T., Forgatch, M. S., Bullock, B. M., & Askeland, E. (in press). Large Scale Implementation of Parent Management Training at the National Level. *Prevention Science.*

Olds, D. L. (2002). Prenatal and infancy home visiting by nurses: From randomized trials to community replication. *Prevention Science, 3*(3), 153-172.

Olds, D. L., Henderson, C. R., Kitzman, H. J., Eckenrode, J. J., Cole, R. E., & Tatelbaum, R. C. (1999). Prenatal and infancy home visitation by nurses: Recent findings. *Future of Children, 9*(1), 44-65.

Olds, D. L., Hill, P. L., O'Brien, R., Racine, D., & Moritz, P. (2003). Taking preventive intervention to scale: The nurse-family partnership. *Cognitive and Behavioral Practice, 10,* 278-290.

Olds, D. L., Robinson, J., O'Brien, R., Luckey, D. W., Pettitt, L. M., Henderson, C. R., et al. (2002). Home visiting by paraprofessionals and by nurses: A randomized, control trial. *Pediatrics, 110*(3), 486-496.

Oxman, A. D., Thomson, M., & Davis, D. (1995). No Magic Bullets - A Systematic review of 102 Trials of Interventions to Improve Professional Practice. *CMAJ, 153,* 1423-1431.

Paine, S. C., Bellamy, G. T., & Wilcox, B. L. (Eds.). (1984). *Human services that work: From innovation to standard practice.* Baltimore, MD: Paul H. Brookes.

Palsha, S. A., & Wesley, P. W. (1998). Improving quality in early childhood environments through on-site consultation. *Topics in Early Childhood Special Education, 18*(4), 243-253.

Panzano, P. C., Seffrin, B., Chaney-Jones, S., Roth, D., Crane-Ross, D., Massatti, R., et al. (in press). The innovation diffusion and adoption research project (IDARP): Moving from the diffusion of research results to promoting the adoption of evidence-based innovations in the Ohio mental health system. *New Research in Mental Health,* 16.

Park, K. S., & Han, S. W. (2002). Performance obstacles in cellular manufacturing implementation – Empirical investigation. *Human Factors and Ergonomics in Manufacturing, 12*(1), 17-29.

Pauli, G. (1998). Technology forecasting and assessment: The case of zero emissions. *Technological Forecasting and Social Change, 58*(1-2), 53-62.

Paulsell, D., Kisker, E. E., Love, J. M., & Raikes, H. H. (2002). Understanding implementation in Early Head Start programs: Implications for policy and practice. *Infant Mental Health Journal, 23*(1-2), 14-35.

Paulson, R. I., Post, R. L., Herinckx, H. A., & Risser, P. (2002). Beyond components: Using fidelity scales to measure and assure choice in program implementation and quality assurance. *Community Mental Health Journal, 38*(2), 119-128.

Pentz, M. A., Trebow, E. A., Hansen, W. B., & MacKinnon, D. P. (1990). Effects of program implementation on adolescent drug use behavior: The Midwestern Prevention Project (MPP). *Evaluation Review, 14*(3), 264-289.

Perlstein, P. H. (2000). Sustaining the implementation of an evidence-based guideline for bronchiolitis. *Archives of Pediatrics & Adolescent Medicine, 154*(10), 1001-1007.

Perrow, C. (1967). A framework for the comparative analysis of organizations. *American Sociological Review, 32,* 194-208.

Perry, L. (2003). Nutritional support in acute stroke: the impact of evidence-based guidelines. *Clinical Nutrition, 22*(3), 283-293.

Petersilia, J. (1990). Conditions that permit intensive supervision. *Crime and Delinquency, 36*(1), 126-145.

Peterson, A. V., Mann, S. L., Kealey, K. A., & Marek, P. M. (2000). Experimental design and methods for school-based randomized trials: Experience from the Hutchinson Smoking Prevention Project (HSPP). *Controlled Clinical Trials, 21*(2), 144-165.

Pew Partnership for Civic Change. (2001). *Wanted Solutions for America: What We Know Works: An overview of research about what works (and what doesn't) in social service programs.* Charlottesville, VA: University of Richmond.

Phillips, E. L., Baron, R.L., Daly, D.L., Daly, P.B., Evans, J.H., & Fixsen, D.L. (1978). *Program Development, Staff Training, and Practical Evaluation at Boys Town, 1975-1977.* Boys Town, NE: Father Flanagan's Boys' Home.

Phillips, E. L., Phillips, E. A., Fixsen, D. L., & Wolf, M. M. (1974). *The Teaching-Family handbook (2nd ed.).* Lawrence. KS: University Press of Kansas.

Phillips, S. D., Burns, B. J., & Edgar, E. R. (2001). Moving Assertive Community Treatment Into Standard Practice. *Psychiatric Services, 52,* 771-779.

Plsek, P. (2001). Redesigning Health Care with Insights from the Science of Complex Adaptive Systems. In Institute of Medicine – Committee on Quality of Health Care in America (Ed.), *Crossing the quality chasm: A new health system for the 21st century.* Washington, D.C.: National Academy Press.

Premkumar, G. (2003). A Meta-Analysis of Research on Information Technology Implementation in Small Business. *Journal of Organizational Computing and Electronic Commerce, 13*(2), 91-121.

Pressman, J. L., & Wildavsky, A. (1973). *Implementation.* Berkeley, CA: University of California Press.

Pronovost, P. J., Rinke, M. L., Emery, K., Dennison, C., Blackledge, C., & Berenholtz, S. M. (2004). Interventions to reduce mortality among patients treated in intensive care units. *Journal of Critical Care, 19*(3), 158-164.

Puska, P., & Uutela, A. (2001). Community Intervention in Cardiovascular Health Promotion: North Karelia, 1972-1999. In N. Schneiderman, M. A. Speers, J. M. Silvia, J. H. Gentry & G. H. Tomes (Eds.), *Integrating behavioral social sciences with public health.* Washington, DC: American Psychological Association.

Racine, D. P. (1998). *Replicating Programs in Social Markets.* Philadelphia, PA: Public/Private Ventures.

Racine, D. P. (2000). *Investing in What Works.* Philadelphia, PA: Public/Private Ventures.

Ramarapu, N. K., Mehra, S., & Frolick, M. N. (1995). A Comparative-Analysis and Review of JIT Implementation Research. *International Journal of Operations & Production Management, 15*(1), 38-48.

Reiter-Lavery, L. (2004). *Finding great MST therapists: New and improved hiring guidelines.* Paper presented at the Third International MST Conference, MST Services, Charleston, SC.

Reppucci, N. D., & Saunders, J. T. (1974). Social psychology of behavior modification: Problems of implementation in natural settings. *American Psychologist,* 649-660.

Robertson, N., et al. (1996). Changing the clinical behaviour of doctors: a psychological framework. *Quality in Health Care, 5*(51), 4.

Rodgers, R., Hunter, John E. , Rogers, Deborah L. (1993). Influence of Top Management Commitment on Management Program Success. *Journal of Applied Psychology, 78*(1), 151-155.

Rogers, E. M. (1983). *Diffusion of Innovations* (4 ed.). New York: The Free Press.

Rogers, E. M. (1995). *Diffusion of Innovations* (5 ed.). New York: The Free Press.

Rogers, R. W. (2002). *White Paper – The power of realization,* from http://www.ddiworld.com/research/publications.asp

Rosenheck, R., Neale, M., & Leaf, P. (1995). A multi-site experimental cost study of intensive psychiatric community care. *Schizophrenia Bulletin, 21*(1), 129-140.

Rosenheck, R. A. (2001). Organizational process: A missing link between research and practice. *Psychiatric Services, 52,* 1607-1612.

Ross, J. G., Luepker, R. V., Nelson, G. D., Saavedra, P., & Hubbard, B. M. (1991). Teenage health teaching modules: Impact of teacher training on implementation and student outcomes. *Journal of School Health, 61*(1), 31-34.

Rossi, P. H., & Freeman, H. E. (1985). *Evaluation: A systemic approach (3rd ed.).* Beverly Hills: Sage.

Roussos, S. T., & Fawcett, S. B. (2000). A review of collaborative partnerships as a strategy for improving community health. *Annual Review of Public Health, 21,* 369-402.

Rubenstein, L. V., Mittman, B. S., Yano, E. M., & Mulrow, C. D. (2000). From understanding health care provider behavior to improving health care – The QUERI framework for quality improvement. *Medical Care, 38*(6), S129-S141.

Rychetnik, L., Frommer, M., Hawe, P., & Shiell, A. (2002). Criteria for evaluating evidence on public health interventions. *Journal of epidemiology and community health, 56*(2), 119-127.

Rycroft-Malone, J. (2004). The PARIHS framework: A framework for guiding the implementation of evidence-based practice. *Journal of Nursing Care Quality, 19*(4), 297-305.

Salanova, M., Cifre, E., & Martin, P. (2004). Information technology implementation styles and their relation with workers' subjective well-being. *International Journal of Operations & Production Management, 24*(1-2), 42-54.

Salasin, S. E., & Davis, H. R. (1977). Facilitating the utilization of evaluation: A rocky road. In I. Davidoff, M. Guttentag & J. Offutt (Eds.), *Evaluating community mental health services: Principles and practice* (pp. 428-443). Rockville, MD: National Institute of Mental Health, The Staff College.

Saliba, D., Rubenstein, L. V., Simon, B., Hickey, E., Ferrell, B., Czarnowski, E., et al. (2003). Adherence to pressure ulcer prevention guidelines: Implications for nursing home quality. *Journal of the American Geriatrics Society, 51*(1), 56-62.

Sambasivarao, K. V., & Deshmukh, S. G. (1995). Selection and implementation of advanced manufacturing technologies. *International Journal of Operations and Production Management, 15*(10), 43-62.

SAMHSA's Mental Health Information Center. (2004). *Using General Organizational Index for evidence-based practices.* Retrieved December 27, 2004, from http://www.mentalhealth.org/cmhs/communitysupport/toolkits/illness/goi/default.asp

Schectman, J. M., Schroth, W. S., Verme, D., & Voss, J. D. (2003). Randomized controlled trial of education and feedback for implementation of guidelines for acute low back pain. *Journal of General Internal Medicine, 18*(10), 773-780.

Schneider, K., Kinlow, M. R., Galloway, A. N., & Ferro, D. L. (1982). An analysis of the effects of implementing the Teaching-Family Model in two community-based group homes. *Child Care Quarterly, 11,* 298-311.

Schoenwald, S. K. (1997). *Rationale for Revisions of Medicaid Standards for Home-Based, Therapeutic Child Care, and Clinical Day Programming.* Columbia, SC: Technical Report prepared for the South Carolina Department of Health and Human Services.

Schoenwald, S. K., Brown, T. L., & Henggeler, S. W. (2000). Inside multisystemic therapy: Therapist, supervisory, and program practices. *Journal of Emotional and Behavioral Disorders, 8*(2), 113-127.

Schoenwald, S. K., Halliday-Boykins, C. A., & Henggeler, S. W. (2003). *Client-level predictors of adherence to MST in community service settings. Family Process, 42*(3), 345-359.

Schoenwald, S. K., Henggeler, S. W., Brondino, M. J., & Rowland, M. D. (2000). Multisystemic therapy: Monitoring treatment fidelity. *Family Process, 39*(1), 83-103.

Schoenwald, S. K., & Hoagwood, K. (2001). Effectiveness, transportability, and dissemination of interventions: What matters when? *Psychiatric Services, 52,* 1190-1197.

Schoenwald, S. K., Sheidow, A. J., & Letourneau, E. J. (2004). Toward Effective Quality Assurance in Evidence-Based Practice: Links Between Expert Consultation, Therapist Fidelity, and Child Outcomes. *Journal of Clinical Child and Adolescent Psychology, 33*(1), 94-104.

Schoenwald, S. K., Sheidow, A. J., Letourneau, E. J., & Liao, J. G. (2003). Transportability of Multisystemic Therapy: Evidence for Multilevel Influences. *Mental Health Services Research, 5*(4), 223-239.

Schofield, J. (2004). A Model of Learned Implementation. *Public Administration, 82*(2), 283-308.

Schofield, M. J., Edwards, K., & Pearce, R. (1997). Effectiveness of two strategies for dissemination of sun-protection policy in New South Wales primary and secondary schools. *Australian and New Zealand Journal of Public Health, 21*(7), 743.

Schorr, L. B. (1993). *Effective strategies for increasing social program replication/adaptation.* Seminar On Effective Strategies For Increasing Social Program Replication/Adaptation. Washington, DC: National Association of Social Workers.

Schuster, M. A., McGlynn, E. A., & Brook, R. H. (1998). How Good Is the Quality of Health Care in the United States? *The Milbank Quarterly, 76*(4), 517.

Sexton, T. L., & Alexander, J. F. (2000). Functional family therapy. *Juvenile Justice Bulletin,* December, 1-7.

Sexton, T. L., & Alexander, J. F. (2002). Family-based empirically supported interventions. *The Counseling Psychologist, 30*(2), 238-261.

Shadish, W. R., Jr. (1984). Lessons from the implementation of deinstitutionalization. *American Psychologist, 39,* 725-738.

Sheldon, T. A., Cullum, N., Dawson, D., Lankshear, A., Lowson, K., Watt, I., et al. (2004). What's the evidence that NICE guidance has been implemented? Results from a national evaluation using time series analysis, audit of patients' notes, and interviews. *British Medical Journal* (BMJ.com), 329, 1-41.

Sherman, J. A., Sheldon, J. B., Morris, K., Strouse, M., & Reese, R. M. (1984). A community-based residential program for mentally retarded adults: An adaptation of the Teaching-Family Model. In S. Paine, T. Bellamy & B. Wilcox (Eds.), *Human Services That Work: From Innovation to Standard Practice* (pp. 167-179). New York: Paul Brookes Publishing Company.

Shern, D. L., Trochim, W. M. K., & LaComb, C. A. (1995). The use of concept mapping for assessing fidelity of model transfer: An example from psychiatric rehabilitation. *Evaluation and Program Planning, 18*(2), 143-153.

Showers, B., & Joyce, B. (1996). The Evolution of Peer Coaching. *Educational Leadership, 53*(6), 12-17.

Simpson, D. D. (2002). A conceptual framework for transferring research to practice. *Journal of Substance Abuse Treatment, 22*(4), 171-182.

Simpson, D. D. (2004). A conceptual framework for drug treatment process and outcomes. *Journal of Substance Abuse Treatment, 27,* 99-121.

Small, M. H., & Yasin, M. (2000). Human factors in the adoption and performance of advanced manufacturing technology in unionized firms. *Industrial Management and Data Systems, 100*(8), 389-402.

Smart, D. A., Blase, K.B., Smart, D.I., Graham, K., Collins, S.R., Daly, P.B., Daly, D.L., Fixsen, D.L., & Maloney, D.M. (1979). *The Teaching-Family Consultant's Handbook (Second ed.).* Boys Town, Nebraska: Father Flanagan's Boys' Home.

Smeele, I. J., Grol, M., Van Schayck, R. P. T., Van den Bosch, W. J. H., Van den Hoogen, H. J. M., & Muris, J. W. M. (1999). Can small group education and peer review improve care for patients with asthma/chronic obstructive pulmonary disease? *Quality in Health Care, 8*(2), 92-98.

Smith, B. J., Strain, P. S., Snyder, P., Sandall, S. R., McLean, M. E., Ramsey, A. B., et al. (2002). DEC recommended practices: A review of 9 years of EI/ECSE research literature. *Journal of Early Intervention, 25*(2), 108-119.

Solberg, L. I., Hroscikoski, M. C., Sperl-Hillen, J. M., O'Connor, P. J., & Crabtree, B. F. (2004). Key issues in transforming health care organizations for quality: the case of advanced access. *Joint Commission Journal on Quality and Safety, 30*(1), 15-24.

Solnick, J. V., Braukmann, C. J., Bedlington, M. M., Kirigin, K. A., & Wolf, M. M. (1981). The relationship between parent-youth interaction and delinquency in group homes. *Journal of Abnormal Child Psychology, 9*(1), 107-119.

Spoth, R., Guyll, M., Trudeau, L., & Goldberg-Lillehoj, C. (2002). Two studies of proximal outcomes and implementation quality of universal preventive interventions in a community-university collaboration context. *Journal of Community Psychology, 30*(5), 499-518.

Spouse, J. (2001). Bridging theory and practice in the supervisory relationship: a sociocultural perspective. *Journal of Advanced Nursing, 33*(4), 512-522.

Startup, M., & Shapiro, D. A. (1993). Therapist treatment fidelity in prescriptive vs. exploratory psychotherapy. *British Journal of Clinical Psychology, 32,* 443-456.

Stein, L. I., & Test, M. A. (1978). *Alternatives to mental hospital treatment.* New York: Plenum Press.

Stivers, M. L., & Ramp, E. A. (1984). A model for educational service delivery: The behavior analysis follow-through model. In S. C. Paine, G. T. Bellamy & B. L. Wilcox (Eds.), *Human services that work: From innovation to standard practice* (pp. 117-131). Baltimore, MD: Paul H. Brookes.

Stokes, T. F., & Baer, D. M. (1977). An implicit technology of generalization. *Journal of Applied Behavior Analysis, 10,* 349-367.

Stolz, S. B. (1981). Adoption of innovations from applied behavioral research: "Does anybody care?" *Journal of Applied Behavioral Analysis, 14,* 491-505.

Substance Abuse and Mental Health Services Administration. (n.d.). *Connecting science to service: SAMHSA model programs.* Washington, DC: U.S. Department of Health and Human Services (http://modelprograms.samhsa.gov).

Taylor, L., Nelson, P., & Adelman, H. (1999). Scaling-up Reforms across a School District. *Reading and Writing Quarterly, 15*(4), 303-325.

Teaching-Family Association. (1979). *Standards of ethical conduct of the Teaching-Family Association.* Morganton, NC: Teaching-Family Association.

Teague, G. B., Bond, G. R., & Drake, R. E. (1998). Program fidelity in assertive community treatment: Development and use of a measure. *American Journal of Orthopsychiatry, 68*(2), 216-232.

Teague, G. B., Drake, R. E., & Ackerson, T. H. (1995). Evaluating use of continuous treatment teams for persons with mental illness and substance abuse. *Psychiatric Services, 46,* 689-695.

ten Brink, L. T. (2004). Implemented as Intended? Recording Family Worker Activities in a Families First Program. *Child Welfare, 83*(3), 197-214.

Timbers, G. D., Jones, R. J., & Davis, J. L. (1981). Safeguarding the rights of children and youth in group-home treatment settings. In G. T. Hannah, W. P. Christian & H. B. Clark (Eds.), *Preservation of Client Rights: A Handbook for Practitioners Providing Therapeutic, Educational, and Rehabilitative Services* (pp. 246-277). New York: The Free Press.

Tornatzky, L. G., Fergus, E. O., Avellar, J. W., Fairweather, G. W., & Fleischer, M. (1980). *Innovation and social process: A national experiment in implementing social technology.* New York: Pergamon Press.

Torrey, W. C., Drake, R. L., Dixon, L., & al., e. (2001). Implementing Evidence-Based Practices for Persons With Severe Mental Illnesses. *Psychiatric Services, 52,* 45-50.

U.S. Department of Health and Human Services. (2001). *Mental health: Culture, race, and ethnicity – A supplement to Mental Health: A Report of the Surgeon General.* Rockville, MD: U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Center for Mental Health Services.

U.S.Department of Health and Human Services. (1999). *Mental Health: A Report of the Surgeon General.* Rockville, MD: U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Center for Mental Health Services, National Institutes of Health, National Institute of Mental Health.

Udo, G. J., & Ehie, I. C. (1996). Advanced manufacturing technologies: Determinants of implementation success. *International Journal of Operations and Production Management, 16*(12), 6-26.

Unger, J. P., Macq, J., Bredo, F., & Boelaert, M. (2000). Through Mintzberg's glasses: a fresh look at the organization of ministries of health. *Bulletin of the World Health Organization, 78*(8), 1005-1014.

Van den Hombergh, P., Grol, R., Van den Hoogen, H. J. M., & Van den Bosch, W. J. H. (1999). Practice visits as a tool in quality improvement: mutual visits and feedback by peers compared with visits and feedback by non-physician observers. *Quality in Health Care, 8*(3), 161-166.

Van Meter, D. S., & Van Horn, C. E. (1975). The policy implementation process: A conceptual framework. *Administration & Society, 6,* 445-488.

VanDenBerg, J. E., & Grealish, M. E. (1998). *The Wraparound Process Training Manual.* Pittsburgh, PA: The Community Partnerships Group.

Wafa, M. A., & Yasin, M. M. (1998). A conceptual framework for effective implementation of JIT: An empirical investigation. *International Journal of Operations and Production Management, 18*(11), 1111-1124.

Walker, H. M., Hops, H., & Greenwood, C. R. (1984). The CORBEH research and development model: Programmatic issues and strategies. In S. C. Paine, G. T. Bellamy & B. L. Wilcox (Eds.), *Human services that work: From innovation to standard practice* (pp. 57-77). Baltimore, MD: Paul H. Brookes.

Walker, J., Koroloff, N., & Schutte, K. (2002). *Implementing high-quality team-based individualized services planning: Necessary and sufficient conditions.* Portland, OR: Research and Training Center on Family Support and Children's Mental Health.

Waltz, J., Addis, M. E., Koerner, K., & Jacobson, N. S. (1993). Testing the integrity of a psychotherapy protocol: Assessment of adherence and competence. *Journal of Consulting and Clinical Psychology, 61*(4), 620-630.

Wanberg, C. R., & Banas, J. T. (2000). Predictors and outcomes of openness to changes in a reorganizing workplace. *Journal of Applied Psychology, 85*(1), 132-142.

Wandersman, A. (2003). Community Science: Bridging the Gap between Science and Practice with Community-Centered Models. *American Journal of Community Psychology, 31*(3-4), 227-242.

Warfel, D. J., Maloney, D. M., & Blase, K. (1980). Consumer feedback in human service programs. *Social Work,* 151-156.

Washington State Institute for Public Policy. (2002). *Washington State's Implementation of Functional Family Therapy for Juvenile Offenders: Preliminary Findings* (No. 02-08-1201). Olympia, WA: Washington State Institute for Public Policy.

Weber, D. E. (1978). Neighborhood entry in group home development. *Child Welfare, 57,* 627-642.

Weber, D. E., Lassiter, R. B., Thompson, L. T., Blase, K. A., Strawhecker, P., Graham, M. E., Carlson, K., Beier, C. H., Domet, S. E., & Gollehon, E. L. (1980). *The group home development workshop manual.* Boys Town, NE: Father Flanagan's Boys' Home.

Webster-Stratton, C. (1996). Early intervention with videotape modeling. Programs for families of children with oppositional defiant disorder or conduct disorder. In E. D. Hibbs & P. S. Jensen (Eds.), *Psychosocial treatments for child and adolescent disorders: Empirically based strategies for clinical practice* (pp. 435-474). Washington DC: American Psychological Association.

Weick, K. (1987). Organizational culture as a source of high reliability. *California Management Review, 29*(2), 112-128.

Weisz, J. R., Donenberg, G. R., Han, S. S., & Weiss, B. (1995). Bridging the gap between laboratory and clinic in child and adolescent psychotherapy. *Journal of Consulting and Clinical Psychology, 63,* 688-701.

Wells, K. B., Sherbourne, C., Schoenbaum, M., Duan, N., Meredith, L., Unutzer, J., et al. (2000). Impact of disseminating quality improvement programs for depression in managed primary care: A randomized controlled trial. *Journal of the American Medical Association, 283*(2), 212-220.

Wells, K. C., Pelham, W. E., Kotkin, R. A., Hoza, B., Abikoff, H. B., Abramowitz, A., et al. (2000). Psychosocial treatment strategies in the MTA study: Rationale, methods, and critical issues in design and implementation. *Journal of Abnormal Child Psychology, 28*(6), 483-505.

Wenocur, S., & Reisch, M. (1989). *From charity to enterprise: The development of American social work in a market economy.* Urbana and Chicago: University of Illinois Press.

Westphal, J. D., Gulati, R., & Shortell, S. M. (1997). Customization or conformity? An institutional and network perspective on the content and consequences of TQM adoption. *Administrative Science Quarterly, 42*(2), 366-394.

Williams, W. (1975). Implementation analysis and assessment. *Policy Analysis, 1,* 531-566.

Willner, A. G., Braukmann, C. J., Kirigin, K. A., Fixsen, D. L., Phillips, E. L., & Wolf, M. M. (1977). The training and validation of youth-preferred social behaviors of child-care personnel. *Journal of Applied Behavior Analysis, 10,* 219-230.

Wineman, J. H., & Fixsen, D. L. (1979). *The Professional Evaluator's Handbook. Boys Town,* Nebraska: Father Flanagan's Boys' Home.

Winer, M., & Ray, K. (2000). *Collaboration handbook: creating, sustaining and enjoying the journey.* St. Paul, MN: The Wilder Foundation.

Winter, S. G., & Szulanski, G. (2001). Replication as Strategy. *Organization Science, 12*(6), 730-743.

Wolf, M. M., Braukmann, C. J., & Kirigin, K. A. (1982). *Program survival: A case study in the development and maintenance of a behavioral intervention program.* Paper presented at the Symposium on Applied Research Methodology, Little Rock, AR.

Wolf, M. M., Kirigin, K. A., Fixsen, D. L., Blase, K. A., & Braukmann, C. J. (1995). The Teaching-Family Model: A case study in data-based program development and refinement (and dragon wrestling). *Journal of Organizational Behavior Management, 15,* 11-68.

Wolpe, J., & Lazarus, A. A. (1966). *Behavior therapy technique.* New York: Pergamon Press.

Wotring, J. (2004). *Personal communication.* Lansing, MI: Michigan Department of Community Health.

Xue, Y., Hodges, K., & Wotring, J. (2004). Predictors of outcome for children with behavior problems served in public mental health. *Journal of Clinical Child and Adolescent Psychology, 33*(3), 516-523.

Yeaton, W. H., & Sechrest, L. (1981). Critical dimensions in the choice and maintenance of successful treatments: Strength, integrity, and effectiveness. *Journal of Consulting & Clinical Psychology, 49,* 156-167.

Zins, J. E., & Illback, R. J. (1995). Consulting to facilitate planned organizational change in schools. *Journal of Educational and Psychological Consultation, 6*(3), 237-245.

Iowa Administrative Code Chapter 12

GENERAL ACCREDITATION STANDARDS (Summary)

DIVISION I

GENERAL STANDARDS

281—12.1(256) General standards.

12.1(1) *Schools and school districts governed by general accreditation standards.* These standards govern the accreditation of all prekindergarten, if offered, or kindergarten through grade 12 school districts operated by public school corporations and the accreditation, if requested, of prekindergarten or kindergarten through grade 12 schools operated under nonpublic auspices. Each school district shall take affirmative steps to integrate students in attendance centers and courses. Schools and school districts shall collect and annually review district, attendance center, and course enrollment data on the basis of race, national origin, gender, and disability. Equal opportunity in programs shall be provided to all students regardless of race, color, national origin, gender, sexual orientation as defined in Iowa Code section 216.2 as amended by 2007 Iowa Acts, Senate File 427, section 1, gender identity as defined in Iowa Code section 216.2 as amended by 2007 Iowa Acts, Senate File 427, section 1, socioeconomic status, disability, religion, or creed. Nothing in this rule shall be construed as prohibiting any bona fide religious institution from imposing qualifications based upon religion when such qualifications are related to a bona fide religious purpose.

12.1(2) *School board.* Each school or school district shall be governed by an identifiable authority which shall exercise the functions necessary for the effective operation of the school and referred to in these rules as the "board."

12.1(3) *Application for accreditation.* The board of any school or school district that is not accredited on the effective date of these standards and which seeks accreditation shall file an application with the director, department of education, on or before the first day of January of the school year preceding the school year for which accreditation is sought.

12.1(4) *Accredited schools and school districts.* Each school or school district receiving accreditation under the provisions of these standards shall remain accredited except when by action of the state board of education it is removed from the list of accredited schools maintained by the department of education in accordance with Iowa Code subsections 256.11(11) and 256.11(12).

12.1(5) *When nonaccredited.* A school district shall be nonaccredited on the day after the date it is removed from the list of accredited schools by action of the state board of education. A nonpublic school shall be nonaccredited on the date established by the resolution of the state board, which shall be no later than the end of the school year in which the nonpublic school is declared to be nonaccredited.

12.1(6) *Alternative provisions for accreditation.* School districts may meet accreditation requirements through the provisions of Iowa Code sections 256.13, nonresident students; 273.7A, services to school districts; 279.20, superintendent—term; 280.15, joint employment and sharing; 282.7, attending in another corporation—payment; and 282.10, whole grade sharing. Nonpublic schools may meet accreditation requirements through the provisions of Iowa Code section 256.12.

12.1(7) *Minimum school calendar and day of instruction.* Each board shall adopt a school calendar that identifies specific days for student instruction, staff development and in–service time, and time for parent–teacher conferences. The length of the school calendar does not dictate the length of contract or days of employment for instructional and noninstructional staff. The school calendar may be operated anytime during the school year of July 1 to June 30 as defined by Iowa Code section 279.10. A minimum of 180 days of the school calendar, for school districts beginning no sooner than a day during the calendar week in which the first day of September falls, shall be used for student instruction. However, if the first day of September falls on a Sunday, school may begin any day during the calendar week preceding September 1. These 180 days shall meet the requirements of "day of school" in subrule 12.1(8), "minimum school day" in subrule 12.1(9), and "day of attendance" in subrule 12.1(10). (Exception: A school or school district may, by board policy, excuse graduating seniors up to five days of instruction after school or school district requirements for graduation have been met.) If additional days are added to the regular school calendar because of inclement weather, a graduating senior who has met the school district's requirements for graduation may be excused from attendance during the extended school calendar. A school or school district may begin its school calendar earlier for other educational purposes involving instructional and noninstructional staff.

12.1(8) *Day of school.* A day of school is a day during which the school or school district is in session and students are under the guidance and instruction of the instructional professional staff. School shall be considered in session during parent–teacher conferences as well as during activities such as field trips if students are engaged in programs or activities under the guidance and direction of the instructional professional staff. All grade levels of the school or school district must be operated and available for attendance by all students. An exception is if either the elementary or secondary grades are closed and provided that this time missed is made up at some other point during the school calendar so as to meet the minimum of 180 days of instruction for all grades 1 through 12. If a classroom or attendance center is closed for emergency health or safety reasons but the remainder of the school or school district is in operation, the day may be counted as a day of school.

12.1(9) *Minimum school day.* A school day shall consist of a minimum of 5½ hours of instructional time for all grades 1 through 12. The minimum hours shall be exclusive of the lunch period. Passing time between classes as well as time spent on parent–teacher conferences may be counted as part of the 5½–hour requirement. The school or school district may record a day of school with less than the minimum instructional hours if emergency health or safety factors require the late arrival or early dismissal of students on a specific day; or if the total hours of instructional time for all grades 1 through 12 in any five consecutive school days equal a minimum of 27½ hours, even though any one day of school is less than the minimum instructional hours because staff development is provided for the instructional professional staff or because parent–teacher conferences have been scheduled beyond the regular school day.

Furthermore, if the total hours of instructional time for the first four consecutive days equal at least 27½ hours because parent–teacher conferences are held beyond the regular school day, a school or school district may record zero hours of instructional time on the fifth consecutive school day as a minimum school day.

12.1(10) *Day of attendance.* A day of attendance shall be a day during which students were present and under the guidance and instruction of the instructional professional staff. When staff

development designated by the board occurs outside of the time required for a "minimum school day," students shall be counted in attendance. (Note exceptions in subrules 12.1(8) and 12.1(9).)

12.1(11) *Kindergarten.* The number of instructional days within the school calendar and the length of the school day for kindergarten shall be defined by the board. This subrule applies to an accredited nonpublic school only if it offers kindergarten.

DIVISION II provides definitions for over 30 terms that are used in describing these standards.

DIVISION III details standards for administration of the school including records to be kept, student records and evaluations, requirements for graduation, student responsibilities and discipline, services to be provided within the school (such as counseling services and library facilities) and audits of school funds.

DIVISION IV details requirements for school personnel including license/certification when required. This division defines the principle, teacher, support personnel including school nurse and volunteers.

DIVISION V describes goals and requirements for the educational program including *Prekindergarten, Kindergarten, Elementary program, grades 1–6, Junior high program grades 7 and 8, and high school, grades 9-12. This division also defines the specified subject matter areas:*

Elementary: English–language arts, social studies, mathematics, science, health, human growth and development, physical education, traffic safety, music, and visual art,

Junior High: English–language arts, social studies, mathematics, science, health, human growth and development, physical education, music, visual art, family and consumer education, career education, and technology education. Instruction in the following areas shall include the contributions and perspectives of persons with disabilities, both men and women, and persons from diverse racial and ethnic groups, and shall be designed to eliminate career and employment stereotypes.

High School Minimum Program courses: English–language arts, six units; social studies, five units; mathematics, six units as specified in 12.5(5)*"c"*; science, five units; health, one unit; physical education, one unit; fine arts, three units; foreign language, four units; and vocational education, 12 units as specified in 12.5(5)*"i."* Beginning with the 2010–2011 school year graduating class, all students in schools and school districts shall satisfactorily complete at least four units of English–language arts, three units of mathematics, three units of science, three units of social studies, and one full unit of physical education as conditions of graduation. The three units of social studies may include the existing graduation requirements of one–half unit of United States government and one unit of United States history.

i. Vocational education—school districts (three units each in at least four of the six service areas). A competency-based vocational program shall consist of a minimum of three sequential units, of which only one may be a core unit, in four of the following six service areas: agricultural education, business and office education, health occupations education, home economics education, industrial education, and marketing education. Other requirements outlined are *Multicultural and gender fair approaches to the educational program, Special education, Technology integration, Global education, Provisions for gifted and talented students, Provisions for at–risk students, and an Early intervention program if funded.*

DIVISION VI provides guidelines for activity programs of accredited schools and school districts, DIVISION VII provides standards for STAFF DEVELOPMENT, DIVISION VIII describes requirement for accountability for student achievement , *Community involvement, Data collection, analysis, and goal setting, Content standards and benchmarks, Assessment of student progress, Assurances and support involving a* five–year comprehensive school improvement plan and any future revisions of that plan. This assurance includes the commitment for ongoing improvement of the educational system and an *Annual progress report for the local community*

DIVISION IX explains the EXEMPTION REQUEST PROCESS for unusual situations.

Document 1 of 1

Source:
Iowa Administrative Rules/Iowa Administrative Code/2810___Education Department __5B281__5D/0790___Chapter 79 STANDARDS FOR PRACTITIONER AND__2E/Chapter 79 STANDARDS FOR PRACTITIONER AND ADMINISTRATORchar(10)PREPARATION PROGRAMS

CHAPTER 79
STANDARDS FOR PRACTITIONER AND ADMINISTRATOR PREPARATION PROGRAMS
(Effective August 31, 2001)
DIVISION I
GENERAL STANDARDS APPLICABLE TO ALL PRACTITIONER PREPARATION PROGRAMS

281—79.1(256) **General statement.** Programs of practitioner and administrator preparation leading to licensure in Iowa are subject to approval by the state board of education, as provided in Iowa Code chapter 256. All programs having accreditation on August 31, 2001, are presumed accredited unless or until the state board takes formal action to remove accreditation.

281—79.2(256) **Definitions.** For purposes of clarity, the following definitions are used throughout the chapter:

"Administrator candidates" means individuals who are enrolled in practitioner preparation programs leading to administrator licensure.

"Administrator preparation programs" means the programs of practitioner preparation leading to licensure of administrators.

"Area education agency" "AEA" means a regional service agency that provides school improvement services for students, families, teachers, administrators and the community.

"Candidates" means individuals who are preparing to become educational practitioners through a practitioner preparation program.

"Clinical experiences" means a candidate's direct experiences in PK-12 schools. "Clinical experiences" includes field experiences prior to student teaching or internship; internships for preparation programs other than teacher preparation; and student teaching, a full-time clinical practice experience in which the teacher preparation program culminates.

"College/university supervisors" means qualified employees or individuals contracted by the college or university offering teacher preparation who provide guidance and supervision to teacher candidates during the candidates' clinical experiences in the schools.

"Cooperating administrators" means school administrators who provide guidance and supervision to administrator candidates during the candidates' clinical experiences in the schools.

"Cooperating teachers" means appropriately licensed classroom teachers of record who provide guidance and supervision to teacher candidates in the cooperating teachers' classrooms during the candidates' field experiences in the schools.

"Delivery model" means the form in which the educator preparation program is delivered to candidates and may include conventional campus-based, face-to-face models, distance learning models, off-campus models, programs delivered through consortia arrangements, and programs or elements delivered by contracted outside providers.

"Department" means department of education.

"Director" means director of the department.

"Distance learning" means a formal education process in which the major portion of the instruction occurs when the learner and the instructor are not in the same place at the same time and occurs through virtually any media including printed materials, videotapes, audio recordings, facsimiles, telephone communications, the ICN, Internet communications through E-mail, and Web-based delivery systems.

"Distance learning program" means a program in which over half of the required courses in the program occur when the learner and the instructor are not in the same place at the same time (see definition of distance learning). These programs include those offered by the professional educational unit through a contract with an outside vendor or in a consortium arrangement with other higher education institutions, area education agencies, or other entities.

"Diverse groups" means one or more groups of individuals possessing certain traits or characteristics, including but not limited to age, color, creed, national origin, race, religion, marital status, sex, sexual orientation, gender identity, disability, or socioeconomic status.

"EPS" means Educational Leadership Policy Standards, national standards for educational administration.

"Facility" means a residential or other setting for a child in which the child receives an appropriate educational program. "Facility" includes a foster care facility as defined in Iowa Code section 237.1, a facility that provides residential treatment pursuant to Iowa Code chapter 125, an approved or licensed shelter care home as defined in Iowa Code section 232.2, subsection 34, an approved juvenile detention home as defined in Iowa Code section 232.2, subsection 32, and a psychiatric medical institution for children as defined in Iowa Code section 135H.1.

"ICN" means the Iowa communications network.

"Institution" means a college or university in Iowa offering practitioner preparation or an educational organization offering administrator preparation and seeking state board approval of its practitioner preparation program(s).

"INTASC" means Interstate New Teacher Assessment and Support Consortium, the source of national standards for beginning teachers.

"Iowa core curriculum" means a legislatively mandated state initiative that provides local school districts and nonpublic schools a guide to delivering instruction to students based on consistent, challenging and meaningful content.

"ISSL" means Iowa Standards for School Leaders.

"Mentor" means an experienced educator who provides guidance to a practitioner, administrator candidate or novice educator.

"Novice" means an individual in an educational position who has no previous experience in the role of that position or who is newly licensed by the board of educational examiners.

"Off-campus program" means a program offered by a unit on sites other than the main campus. Off-campus programs may be offered in the same state, in other states, or in countries other than the United States.

"Practitioner candidates" means individuals who are enrolled in practitioner preparation programs leading to licensure as teachers, as administrators or as other professional school personnel that require a license issued by the board of educational examiners.

"Practitioner preparation programs" means the programs of practitioner preparation leading to licensure of teachers, administrators, and other professional school personnel.

"Program" means a specific field of specialization leading to a specific endorsement.

"Regional accreditation" means official approval by an agency or organization approved or recognized by the U.S. Department of Education.

"State board" means Iowa state board of education.

"Students" means PK-12 pupils.

"Teacher candidates" means individuals who are enrolled in practitioner preparation programs leading to teacher licensure.

"Unit" means the organizational entity within an institution with the responsibility of administering and delivering the practitioner preparation program(s).

281—79.3(256) **Institutions affected.** In order to attain the authority to recommend candidates for Iowa licensure, colleges and universities offering practitioner preparation programs in Iowa, as well as other Iowa educational organizations engaged in the preparation of school administrators, shall meet the standards contained in this chapter to gain or maintain state board approval of their programs.

281—79.4(256) **Criteria for practitioner preparation programs.** Each institution seeking approval by the state board of its programs of practitioner preparation, including those programs offered by distance delivery models or at off-campus locations, must be regionally accredited and shall file evidence of the extent to which each program meets the standards contained in this chapter by means of a written self-evaluation report and an evaluation conducted by the department. The institution shall demonstrate such evidence by means of a template developed by the department and through a site visit conducted by the department. After the state board has approved the practitioner preparation programs of an institution, students who complete the programs and are recommended by the authorized official of that institution will be issued the appropriate license and endorsement(s).

281—79.5(256) **Approval of programs.** Approval of institutions' practitioner preparation programs by the state board shall be based on the recommendation of the director after study of the factual and evaluative evidence on record about each program in terms of the standards contained in this chapter.

Approval, if granted, shall be for a term of seven years; however, approval for a lesser term may be granted by the state board if it determines conditions so warrant.

If approval is not granted, the applying institution will be advised concerning the areas in which improvement or changes appear to be essential for approval. In this case, the institution shall be given the opportunity to present factual information concerning its programs at a regularly scheduled meeting of the state board, not beyond three months of the board's initial decision. Following a minimum of six months after the board's decision to deny approval, the institution may reapply when it is ready to show what actions have been taken to address the areas of suggested improvement.

Programs may be granted conditional approval upon review of appropriate documentation. In such an instance, the program shall receive a full review after one year or, in the case of a new program, at the point at which candidates demonstrate mastery of standards for licensure.

281—79.6(256) **Visiting teams.** Upon application or reapplication for approval, a review team shall visit each institution for evaluation of its practitioner preparation program(s). When an institution offers off-campus practitioner preparation programs, the team may elect to include visits to some or all of the sites of the off-campus programs. The membership of the team shall be selected by the department with the concurrence of the institution being visited. The team may include faculty members of other practitioner preparation institutions; personnel from elementary and secondary schools, to include licensed practitioners; personnel of the state department of education; personnel of the board of educational examiners; and representatives from professional education organizations. Each team member should have appropriate competencies, background, and experiences to enable the member to contribute to the evaluation visit. The expenses for the review team shall be borne by the institution.

281—79.7(256) **Periodic reports.** Upon request of the department, approved programs shall make periodic reports which shall provide basic information necessary to keep records of each practitioner preparation program up to date and to carry out research studies relating to practitioner preparation. The department may request that information be disaggregated by attendance center or delivery model or both.

281—79.8(256) **Reevaluation of practitioner preparation programs.** Every seven years or at any time deemed necessary by the director, an institution shall file a written self-evaluation of its practitioner preparation programs to be followed by a review team visit. Any action for continued approval or rescission of approval shall be approved by the state board.

281—79.9(256) **Approval of program changes.** Upon application by an institution, the director is authorized to approve minor additions to, or changes within, the curricula of an institution's approved practitioner preparation program. When an institution proposes a revision which exceeds the primary scope of its programs, including revisions which significantly change the delivery model(s), the revisions shall become operative only after having been approved by the state board.

DIVISION II
SPECIFIC EDUCATION STANDARDS APPLICABLE TO ALL PRACTITIONER PREPARATION PROGRAMS

281—79.10(256) **Governance and resources standard.** Governance and resources shall adequately support the preparation of practitioner candidates to meet professional, state and institutional standards in accordance with the following provisions. All provisions of this standard shall be demonstrated appropriately and equitably for all programs regardless of delivery model, including programs delivered by distance learning and programs offered on campus, off campus, and through any other model of delivery.

79.10(1) A clearly understood governance structure provides guidance and support for the practitioner preparation program(s). Programs offered by various delivery models, including distance learning and off-campus models, are integrated appropriately into the governance structure of the institution.

79.10(2) The professional education unit has primary responsibility for all programs offered by the institution for the initial and continuing preparation of teachers, administrators and other professional school personnel.

79.10(3) The unit's conceptual framework establishes the shared vision for the unit and provides the foundation for coherence among curriculum, instruction, field experiences, clinical practice, assessment, and evaluation aligned with appropriate professional standards and best practice in classroom instruction and school leadership.

79.10(4) The work climate, policies, and assignments promote intellectual vitality, including best practices in teaching, scholarship and service among faculty.

79.10(5) The unit provides evidence of ongoing collaboration with the professional community, including evidence that there is an active advisory committee that, at a minimum, is solicited semiannually for program input to inform the unit.

79.10(6) When a unit is part of a college or university, the unit provides evidence of ongoing collaboration with other departments of the institution, especially regarding content endorsements.

79.10(7) Procedures for an appeals process for candidates and faculty are clearly communicated and provided to all candidates and faculty.

79.10(8) The unit administers a systematic and comprehensive evaluation system designed to enhance the teaching competence and intellectual vitality of the professional education unit.

79.10(9) The institution provides the commitment and resources necessary to support a quality clinical program for all practitioner candidates.

79.10(10) Institutional commitment to the unit includes financial resources, facilities, appropriate educational materials, library services, and equipment to ensure the fulfillment of the institution's and unit's missions, and the delivery of quality programs, regardless of delivery model.

79.10(11) The unit provides sufficient faculty, administrative, clerical, and technical staff to plan and deliver a quality practitioner program(s).

79.10(12) Resources are available to support professional development opportunities for faculty.

79.10(13) Resources are available to support technological and instructional needs to enhance candidate learning.

79.10(14) The use of part-time faculty and graduate students in teaching roles is purposeful and is managed to ensure integrity, quality, and continuity of all programs, including those delivered by distance learning, off-campus, and other delivery models.

281—79.11(256) **Diversity standard.** The environment and experiences provided practitioner candidates shall support candidate growth in knowledge, skills, and dispositions to help all students learn in accordance with the following provisions. All provisions of this standard shall be demonstrated appropriately and equitably for all programs regardless of delivery model, including programs delivered by distance learning and programs offered on campus, off campus, and through any other model of delivery.

79.11(1) The institution and unit maintain a climate that supports diversity.

79.11(2) The institution and unit document their efforts in maintaining and increasing a diverse faculty and include teacher education candidates in plans, policies, and practices as required by the Higher Learning Commission.

79.11(3) Practitioner candidates experience clinical practices in settings that include diverse populations and students of different grade levels and of diverse learning needs.

281—79.12(256) **Faculty standard.** Faculty qualifications and performance shall facilitate the professional development of practitioner candidates in accordance with the following provisions. All provisions of this standard shall be demonstrated appropriately and equitably for all programs regardless of delivery model, including programs delivered by distance learning and programs offered on campus, off campus, and through any other model of delivery.

79.12(1) Faculty members in professional education are adequately prepared for responsibilities assigned to them and have had experiences in situations similar to those for which the practitioner candidates are being prepared. Faculty members have experience and adequate preparation in effective methods for any model of program delivery in which they are assigned responsibilities.

79.12(2) Faculty members in all program delivery models instruct and model best practices in teaching, including the assessment of their own effectiveness as it relates to candidate performance.

79.12(3) Faculty members in all program delivery models are engaged in professional development

as well as scholarly and service activities that relate to teaching, learning, and practitioner preparation.

79.12(4) Faculty members in all program delivery models collaborate regularly and in significant ways with colleagues in the professional education unit and other college/university units, schools, the department, area education agencies, and professional associations as well as with community representatives.

79.12(5) Part-time faculty members and employed graduate assistants in all program delivery models are identified as faculty members and meet the background and experience requirements appropriate for their assigned responsibilities.

79.12(6) Faculty members preparing in all program delivery models who prepare practitioner candidates maintain an ongoing, meaningful involvement in activities in preschools or elementary, middle, or secondary schools, in AEAs, or in appropriate facilities. A minimum of 60 hours of such activities shall include team teaching or appropriate collaborative experiences during the period between approval visits. A maximum of 30 hours of the 60-hour requirement may be completed by supervising candidates.

281—79.13(256) **Assessment system and unit evaluation standard.** The unit's assessment system shall appropriately monitor individual candidate performance and use those data in concert with other information to evaluate and improve the unit and its programs. All provisions of this standard shall be demonstrated appropriately and equitably for all programs regardless of delivery model, including programs delivered by distance learning and programs offered on campus, off campus, and through any other model of delivery.

79.13(1) Unit assessment system.

a. The unit utilizes a clearly defined management system for the collection, analysis, and use of assessment data.

b. The unit provides evidence that the assessment system is congruent with the institution's mission and the unit's framework for preparation of effective practitioners.

c. The unit demonstrates an alignment of unit standards with INTASC standards for teacher preparation, ISSL standards for administrator preparation, and appropriate standards for other professional programs, as well as with Iowa teaching standards, Iowa preparation core professional standards in subrule 79.15(7), and the Iowa board of educational examiners' licensing standards in 282—subrules 13.18(4), 13.18(5), 18.4(1), 18.4(2), and 18.9(1) and rule 282—18.10(272).

d. The unit clearly documents candidates' attainment of the unit standards.

e. The unit demonstrates propriety, utility, accuracy and fairness of both the overall assessment system and the instruments used and provides scoring rubrics or other criteria used in evaluation instruments.

f. The unit documents the quality of programs through the collective presentation of assessment data related to performance of practitioner candidates. Documentation shall include:

(1) Data collected throughout the program, including data from all delivery models;

(2) Evidence of evaluative data collected from practitioners who work with the unit's candidates;

(3) Evidence of evaluative data collected by the unit through follow-up studies of graduates and their employers.

g. The unit explains the process for reviewing and revising the assessment system.

h. The unit demonstrates how the information gathered by the unit and from the candidate assessment system is shared with faculty and other stakeholders and used for program improvement.

79.13(2) Performance assessment system for candidates.

a. The system is an integral part of the unit's planning and evaluation system.

b. The system has multiple admission criteria and assessments to identify candidates who have the potential to become successful practitioners.

c. For teacher preparation programs, the system includes the administration of a basic skills test, with program admission denied to any applicant who fails to achieve the institution's designated criterion score.

d. The system has multiple decision points. (Minimum: admission to professional education program; approval for student teaching, administrative field experience, or other culminating clinical experiences; and recommendation for licensure.)

e. The system includes a coherent, sequential assessment system for individual practitioner candidates. The assessment system is shared with faculty with guidance for course and program improvement, as well as assessment criteria and a process for ongoing feedback to practitioner

candidates about their achievement of program standards with guidance for reflection and improvement. Data are drawn from multiple formative and summative assessments of each of the following, including, but not limited to, institutional assessment of content knowledge, professional knowledge, and pedagogical knowledge and their applications, and teaching or leadership performance including the effect on student learning.

f. Practitioner candidate performance is assessed at the same standard regardless of the place or manner in which the program is delivered.

79.13(3) The unit annually reports to the department such data as are required by the state and federal governments at dates determined by the department.

79.13(4) The department shall periodically conduct a survey of schools, agencies, or facilities that employ licensed graduates of approved programs to ensure that the graduates' needs are adequately met by their programs and by the approval process herein.

DIVISION III
SPECIFIC EDUCATION STANDARDS APPLICABLE ONLY TO INITIAL PRACTITIONER PREPARATION
PROGRAMS FOR TEACHER CANDIDATES

281—79.14(256) **Teacher preparation clinical practice standard.** The unit and its school partners shall provide field experiences and student teaching opportunities that assist candidates in becoming successful teachers in accordance with the following provisions. All provisions of this standard shall be demonstrated appropriately and equitably for all programs regardless of delivery model, including programs delivered by distance learning and programs offered on campus, off campus, and through any other model of delivery.

79.14(1) Candidates admitted to a teacher preparation program participate in field experiences including both observation and participation in teaching activities in a variety of school settings and totaling at least 80 hours' duration, with at least 10 hours occurring prior to acceptance into the program. A maximum of 40 hours of previous experience as a teacher or teaching associate may be credited toward the 80 hours if a program chooses to implement specific criteria for this option.

79.14(2) Clinical practice for teacher candidates supports the development of knowledge, dispositions, and skills that are identified in the unit standards. The unit ensures that clinical experiences occurring in all locations are well-sequenced, supervised by appropriately qualified personnel, monitored by the unit, and integrated into the conceptual framework of the program.

79.14(3) Programs document clinical expectations at various developmental levels throughout the program. These expectations are shared with candidates, supervisors, and cooperating teachers.

79.14(4) Environments for clinical practice support learning in context, and include all of the following:

a. Scheduling and use of time and resources to allow candidates to participate with teachers and other practitioners and learners in the school setting.

b. Teacher candidate learning that takes place in the context of providing high-quality instructional programs for children in a state-approved school or educational facility.

c. Opportunities for teacher candidates to observe and be observed by others and to engage in discussion and reflection on clinical practice.

d. The involvement of teacher candidates in assessment, planning and instruction as well as in activities directed toward the improvement of teaching and learning.

79.14(5) PK-12 school and college/university personnel share responsibility for the selection of cooperating teachers who demonstrate skills, knowledge, and dispositions of highly accomplished practitioners.

79.14(6) Cooperating teachers and college/university supervisors share responsibility for supervising the candidate's achievement of unit standards.

79.14(7) The unit is responsible for all of the following:

a. Defining qualifications for practitioner candidates entering clinical practice.

b. Providing quality supervision that includes primary responsibility for communication/collaboration with cooperating teachers and candidates.

c. Responding to specific needs of cooperating schools.

d. Implementing an evaluation process that assists in selecting quality cooperating teachers.

79.14(8) Teacher candidates develop and demonstrate the capacity to utilize assessment data in effecting student learning within their classrooms.

79.14(9) Accountability for student teaching experiences is demonstrated through all of the following:

a. Involvement of the cooperating teacher in the continuous formative evaluation and support of practitioner candidates.

b. Involvement of the college or university supervisor in the formative evaluation of practitioner candidates through a minimum of biweekly observations and consultations.

c. Collaboration of the cooperating teacher and the college/university supervisor in determining areas for improvement, developing and implementing plans for improvement, and determining final evaluation of the student teacher.

d. Use of written evaluation procedures, with completed evaluation forms included in practitioner candidates' permanent institutional records.

79.14(10) The student teaching experience for initial licensure meets all of the following:

a. Includes full-time experience for a minimum of 14 consecutive weeks during the student's final year of the practitioner preparation program.

b. Takes place in the classroom of an appropriately licensed cooperating teacher in the subject area and grade level endorsement desired.

c. Consists of interactive experiences that involve college or university personnel, the student teacher, and the cooperating teacher.

d. Includes prescribed minimum expectations and responsibilities, including ethical behavior, for the student teacher.

e. Includes prescribed minimum expectations and responsibilities for cooperating teachers, the school district or accredited nonpublic school, and higher education supervising faculty members.

f. Requires the student teacher to become knowledgeable about the Iowa teaching standards and to experience a mock evaluation performed by the cooperating teacher or a person who holds an Iowa evaluator license (see rule 282—20.51(272) and Iowa Code section 284.10), which shall not be used as an assessment tool by the program.

g. Requires the student teacher to bear primary responsibility for planning and instruction within the classroom for a minimum of two weeks (ten school days).

h. Involves the student teacher in professional meetings and other school-based activities directed toward the improvement of teaching and learning.

i. Involves the student teacher in communication and interaction with parents or guardians of students in the student teacher's classroom.

79.14(11) The institution annually offers one or more workshops for all cooperating teachers to define the objectives of the student teaching experience, review the responsibilities of the cooperating teacher, and provide the cooperating teacher other information and assistance the institution deems necessary. The cumulative instructional time for the workshops shall be one school day or the equivalent hours, and the workshops shall utilize delivery strategies identified as appropriate for staff development and reflect information gathered through feedback from workshop participants.

79.14(12) The institution shall enter into a written contract with each cooperating school providing clinical experiences, including field experiences and student teaching, as stipulated in Iowa Code section 272.27.

281—79.15(256) **Teacher preparation candidate knowledge, skills and dispositions standard.** Teacher candidates shall demonstrate the content knowledge and the pedagogical and professional knowledge, skills and dispositions necessary to help all students learn in accordance with the following provisions. All provisions of this standard shall be demonstrated appropriately and equitably for all programs regardless of delivery model, including programs delivered by distance learning and programs offered on campus, off campus, and through any other model of delivery.

79.15(1) Prior to admission to the teacher preparation program, each teacher candidate attains the qualifying score determined by the unit on a basic skills test of reading, writing, and mathematics.

79.15(2) Each teacher candidate demonstrates the acquisition of a core of liberal arts knowledge, including but not limited to English composition, mathematics, natural sciences, social sciences, and humanities.

79.15(3) Each teacher candidate completes specific, dedicated coursework in human relations and cultural competency and thus demonstrates acquisition of knowledge about and skill in interpersonal and intergroup relations that contribute to the development of sensitivity to and understanding of the values, beliefs, life styles, and attitudes of individuals and the diverse groups found in a pluralistic

society. The unit shall provide evidence that the human relations and cultural competency coursework is designed to develop the ability of participants to:

a. Be aware of and understand the values, life styles, history, and contributions of various identifiable subgroups in our society.

b. Recognize and deal with dehumanizing biases such as sexism, racism, prejudice, and discrimination and become aware of the impact that such biases have on interpersonal relations.

c. Translate knowledge of human relations into attitudes, skills, and techniques which will result in favorable learning experiences for students.

d. Recognize human diversity and the rights of each individual.

e. Relate effectively to other individuals and various subgroups other than one's own.

f. Have an awareness of federal and state civil rights legislation as it impacts students.

79.15(4) Each teacher candidate demonstrates, within specific coursework dedicated to understanding exceptional learners, in other coursework, and in clinical experiences, the necessary knowledge, skills, and dispositions toward meeting the learning needs of all students, including students from diverse ethnic, racial, and socioeconomic backgrounds, students with disabilities, students who are gifted and talented, English language learners, and students who may be at risk of not succeeding in school.

79.15(5) Each teacher candidate in elementary education demonstrates acquisition of knowledge about and receives preparation in elementary reading programs, including but not limited to reading recovery.

79.15(6) Each teacher candidate in secondary education demonstrates acquisition of knowledge about and receives preparation in the integration of reading strategies into secondary content areas.

79.15(7) Each teacher candidate demonstrates acquisition of the knowledge, skills and dispositions designated by the unit standards and aligned with the INTASC standards embedded in the professional education core for an Iowa teaching license at a level appropriate for a novice teacher. Each candidate exhibits competency in all of the following professional core curricula:

a. *Content/subject matter specialization.* The candidate demonstrates an understanding of the central concepts, tools of inquiry, and structure of the discipline(s) the candidate teaches and creates learning experiences that make these aspects of the subject matter meaningful for students. This is evidenced by a completion of a 30-semester-hour teaching major which must minimally include the requirements for at least one of the basic endorsement areas, special education teaching endorsements, or secondary level occupational endorsements. Each elementary candidate must also complete a field of specialization in a single discipline or a formal interdisciplinary program of at least 12 semester hours.

b. *Student learning.* The candidate demonstrates an understanding of human growth and development and of how students learn and participates in learning opportunities that support intellectual, career, social and personal development.

c. *Diverse learners.* The candidate demonstrates an understanding of how students differ in their approaches to learning and creates instructional opportunities that are equitable and adaptable to diverse learners.

d. *Instructional planning.* The candidate plans instruction based upon knowledge of subject matter, students, the community, curriculum goals, and state curriculum models.

e. *Instructional strategies.* The candidate demonstrates an understanding of and an ability to use a variety of instructional strategies to encourage student development of critical and creative thinking, problem-solving, and performance skills.

f. *Learning environment/classroom management.* The candidate uses an understanding of individual and group motivation and behavior; creates a learning environment that encourages positive social interaction, active engagement in learning, and self-motivation; maintains effective classroom management; and is prepared to address behaviors related to substance abuse and other high-risk behaviors.

g. *Communication.* The candidate uses knowledge of effective verbal, nonverbal, and media communication techniques, and other forms of symbolic representation, to foster active inquiry and collaboration and to support interaction in the classroom.

h. *Assessment.* The candidate understands and uses formal and informal assessment strategies to evaluate the continuous intellectual, social, and physical development of the student, and effectively uses both formative and summative assessment of students, including student achievement data, to determine appropriate instruction.

i. *Foundations, reflective practice and professional development.* The candidate develops

knowledge of the social, historical, and philosophical foundations of education. The candidate continually evaluates the effects of the candidate's choices and actions on students, parents, and other professionals in the learning community; actively seeks out opportunities to grow professionally; and demonstrates an understanding of teachers as consumers of research and as researchers in the classroom.

j. *Collaboration, ethics and relationships.* The candidate fosters relationships with parents, school colleagues, and organizations in the larger community to support student learning and development; demonstrates an understanding of educational law and policy, ethics, and the profession of teaching, including the role of boards of education and education agencies; and demonstrates knowledge of and dispositions for cooperation with other educators, especially in collaborative/co-teaching as well as in other educational team situations.

k. *Technology.* The candidate effectively integrates technology into instruction to support student learning.

l. *Methods of teaching.* Methods of teaching have an emphasis on the subject and grade level endorsement desired.

79.15(8) Each teacher candidate meets all requirements established by the board of educational examiners for any endorsement for which the candidate is recommended, as well as standards developed by national professional organizations as appropriate for specific endorsement areas. Programs shall submit curriculum exhibit sheets for approval by the board of educational examiners and the department.

79.15(9) Candidates seeking an endorsement in elementary education attain the state's designated criterion score on a content knowledge assessment as a condition precedent to successful program completion and recommendation for licensure.

79.15(10) Candidates seeking an initial Iowa teaching license demonstrate competency in coursework directly related to the Iowa core curriculum.

DIVISION IV
SPECIFIC EDUCATION STANDARDS APPLICABLE ONLY TO ADMINISTRATOR PREPARATION PROGRAMS

281—79.16(256) **Administrator preparation clinical practice standard.** The unit and its school partners shall provide clinical experiences that assist candidates in becoming successful school administrators in accordance with the following provisions. All provisions of this standard shall be demonstrated appropriately and equitably for all programs regardless of delivery model, including programs delivered by distance learning and programs offered on campus, off campus, and through any other model of delivery.

79.16(1) Clinical practice for administrator candidates supports the development of knowledge, dispositions, and skills that are identified in the unit standards. The unit ensures that clinical experiences occurring in all locations are well-sequenced, supervised by appropriately qualified personnel, monitored by the unit, and integrated into the conceptual framework of the program.

79.16(2) Each administrator candidate participates in field experiences that include both observation and involvement in management and leadership responsibilities. Programs document clinical expectations at various developmental levels. Clinical expectations are directly linked to coursework throughout the program, reflect collaboration among program faculty, and are shared with candidates, supervisors and cooperating administrators.

79.16(3) Environments for clinical practice support learning in context and include all of the following:

a. Scheduling and use of time and resources to allow candidates to participate with administrators and other practitioners and learners in the school setting.

b. Administrator candidate learning that takes place in the context of providing high-quality instructional programs for students in a state-approved school or educational facility.

c. Opportunities for administrator candidates to observe and be observed by others and to engage in discussion and reflection on clinical practice.

d. The involvement of administrator candidates in relevant responsibilities directed toward the improvement of teaching and learning to include demonstration of the capacity to facilitate the use of formative and summative assessment data in effecting student learning within their schools.

79.16(4) The field experience component for initial administrator licensure meets all of the following requirements:

a. Includes experience for a minimum of 400 hours during each candidate's preparation program.

b. Takes place in multiple educational settings that include diverse populations and students of

different age groups.

c. Takes place with appropriately licensed cooperating administrators.

d. Includes communication among institution personnel, the candidate, and the cooperating administrator regarding candidate progress.

e. Includes prescribed minimum expectations and responsibilities of the candidate for both leadership and managerial tasks as well as ethical behavior.

f. Includes minimum expectations and responsibilities for the participating entities: cooperating administrators, school districts, accredited nonpublic schools, AEAs, and higher education supervising faculty members.

g. Involves the candidate in professional meetings and other school-based activities directed toward the improvement of teaching and learning.

h. Involves the candidate in communication and interaction with parents or guardians, community members, faculty and staff, and the cooperating administrator in the school.

79.16(5) PK-12 school and institution professionals share responsibility for the selection of cooperating administrators who demonstrate skills, knowledge, and dispositions appropriate for administrator practitioners.

79.16(6) The unit is responsible for all of the following:

a. Defining qualifications for candidates entering clinical practice and for cooperating administrators who mentor candidates in their clinical experiences.

b. Providing quality supervision that includes primary responsibility for communication/collaboration with cooperating administrators and candidates.

c. Responding to specific needs of cooperating schools.

d. Selection, training, evaluation and support of institution faculty members who supervise administrator candidates.

e. Selection, training, evaluation and support of school administrators who mentor administrator candidates.

79.16(7) Each administrator candidate develops and demonstrates the capacity to utilize assessment data in effecting student learning within the candidate's school(s).

79.16(8) Accountability for field experiences is demonstrated through the following:

a. Collaboration between the cooperating administrator and the institution supervisors in formative evaluation of candidates to include identifying areas for improvement, developing and implementing plans for improvement, and determining final evaluation of the candidates.

b. Use of authentic performance measures appropriate to the required assignments in the clinical experiences, with written documentation and completed evaluation forms included in administrator candidates' permanent institutional records.

79.16(9) The institution annually delivers one or more professional development opportunities for cooperating administrators to define the objectives of the field experience, review the responsibilities of cooperating administrators, build skills in coaching and mentoring, and provide cooperating administrators other information and assistance the institution deems necessary. The professional development opportunities shall utilize delivery strategies identified as appropriate for professional development and reflect information gathered through feedback from workshop participants.

79.16(10) The institution shall enter into a written contract with each cooperating school district or AEA that provides field experiences for administrator candidates as stipulated in Iowa Code section 272.27.

281—79.17(256) **Administrator candidate knowledge, skills and dispositions standard.** Administrator candidates shall demonstrate the content knowledge and the pedagogical and professional knowledge, skills and dispositions necessary to help all students learn in accordance with the following provisions. All provisions of this standard shall be demonstrated appropriately and equitably for all programs regardless of delivery model, including programs delivered by distance learning and programs offered on campus, off campus, and through any other model of delivery.

79.17(1) Each administrator candidate shall demonstrate through coursework the knowledge, skills and dispositions necessary to meet the following Iowa Standards for School Leaders (ISSL), at a level appropriate for a novice administrator:

a. Facilitating the development, articulation, implementation, and stewardship of a vision of learning that is shared and supported by the school community (ISSL Standard 1: Shared Vision). Each administrator candidate:

(1) In collaboration with others, uses appropriate data to establish rigorous, concrete goals in the context of student achievement and instructional programs.

(2) Uses research and best practices in improving the educational program.

(3) Articulates and promotes high expectations for teaching and learning.

(4) Aligns and implements the educational programs, plans, actions, and resources with the district's vision and goals.

(5) Provides leadership for major initiatives and change efforts.

(6) Communicates effectively to various stakeholders regarding progress with school improvement plan goals.

b. Advocating, nurturing and sustaining a school culture and instructional program conducive to student learning and staff professional development (ISSL Standard 2: Culture of Learning). Each administrator candidate:

(1) Provides leadership for assessing, developing and improving climate and culture.

(2) Systematically and fairly recognizes and celebrates accomplishments of staff and students.

(3) Provides leadership, encouragement, opportunities and structure for staff to continually design more effective teaching and learning experiences for all students.

(4) Monitors and evaluates the effectiveness of curriculum, instruction and assessment.

(5) Evaluates staff and provides ongoing coaching for improvement.

(6) Ensures that staff members receive professional development that directly enhances their performance and improves student learning.

(7) Uses current research and theory about effective schools and leadership to develop and revise the administrator's professional growth plan.

(8) Promotes collaboration with all stakeholders.

(9) Is easily accessible and approachable to all stakeholders.

(10) Is highly visible and engaged in the school community.

(11) Articulates the desired school culture and shows evidence about how it is reinforced.

c. Ensuring management of the organization, operations and resources for a safe, efficient and effective learning environment (ISSL Standard 3: Management). Each administrator candidate:

(1) Complies with state and federal mandates and local board policies.

(2) Recruits, selects, inducts, and retains staff to support quality instruction.

(3) Addresses current and potential issues in a timely manner.

(4) Manages fiscal and physical resources responsibly, efficiently, and effectively.

(5) Protects instructional time by designing and managing operational procedures to maximize learning.

(6) Communicates effectively with both internal and external audiences about the operations of the school.

d. Collaborating with families and community members, responding to diverse community interests and needs and mobilizing community resources (ISSL Standard 4: Family and Community). Each administrator candidate:

(1) Engages family and community by promoting shared responsibility for student learning and support of the education system.

(2) Promotes and supports a structure for family and community involvement in the education system.

(3) Facilitates the connections of students and families to the health and social services that support a focus on learning.

(4) Collaboratively establishes a culture that welcomes and honors families and community and seeks ways to engage them in student learning.

e. Acting with integrity, fairness and in an ethical manner (ISSL Standard 5: Ethics). Each administrator candidate:

(1) Demonstrates ethical and professional behavior.

(2) Demonstrates values, beliefs, and attitudes that inspire others to higher levels of performance.

(3) Fosters and maintains caring professional relationships with staff.

(4) Demonstrates appreciation for and sensitivity to diversity in the school community.

(5) Is respectful of divergent opinions.

f. Understanding the profile of the community and responding to, and influencing, the larger political, social, economic, legal and cultural context (ISSL Standard 6: Societal Context). Each administrator candidate:

(1) Collaborates with service providers and other decision makers to improve teaching and learning.
(2) Advocates for the welfare of all members of the learning community.
(3) Designs and implements appropriate strategies to reach desired goals.

79.17(2) Each new administrative candidate successfully completes the appropriate evaluator training based on the Iowa teaching standards and ISSL standards provided by a state-approved evaluator trainer.

79.17(3) Each administrator candidate demonstrates the knowledge, skills, and dispositions necessary to support the implementation of the Iowa core curriculum.

79.17(4) Each administrator candidate demonstrates acquisition of knowledge about and skill in interpersonal and intergroup relations that contribute to the development of sensitivity to and understanding of the values, beliefs, cultures, and attitudes of individuals and the diverse groups found in a pluralistic society. The program shall provide evidence of candidates' attainment of such knowledge and skills through the integration of these human relations and cultural competency issues within the program's coursework.

79.17(5) Each administrator candidate demonstrates, within specific coursework dedicated to understanding exceptional learners, in other coursework, and in clinical experiences, the knowledge, skills, and dispositions necessary to meet the learning needs of all students, including students from diverse ethnic, racial, and socioeconomic backgrounds, students with disabilities, students who are gifted and talented, English language learners, and students who may be at risk of not succeeding in school.

79.17(6) Each administrator candidate meets all requirements established by the board of educational examiners for any endorsement for which the candidate is recommended, as well as standards developed by national professional organizations as appropriate for specific endorsement areas. Programs shall submit curriculum exhibit sheets for approval by the board of educational examiners and the department.

281—79.18 Reserved.

DIVISION V
SPECIFIC EDUCATION STANDARDS APPLICABLE ONLY TO PRACTITIONER PREPARATION PROGRAMS OTHER THAN TEACHER OR ADMINISTRATOR PREPARATION PROGRAMS

281—79.19(256) **Purpose.** This division addresses preparation of an individual seeking a license based on school-centered preparation for employment as one of the following: school guidance counselor, school audiologist, school psychologist, school social worker, speech-language pathologist, supervisor of special education (support and orientation and mobility specialist). (See also the board of educational examiners' 282—Chapter 27, regarding licenses for service other than as a teacher.)

281—79.20(256) **Clinical practice standard.** The unit and its school, AEA, and facility partners shall provide clinical experiences that assist candidates in becoming successful practitioners in accordance with the following provisions. All provisions of this standard shall be demonstrated appropriately and equitably for all programs regardless of delivery model, including programs delivered by distance learning and programs offered on campus, off campus, and through any other model of delivery.

79.20(1) Clinical practice for candidates supports the development of knowledge, dispositions, and skills that are identified in the unit standards. The unit ensures that clinical experiences occurring in all locations are well-sequenced, supervised by appropriately qualified personnel, monitored by the unit, and integrated into the conceptual framework of the program.

79.20(2) Candidates participate in clinical/field experiences that include both observation and involvement in professional responsibilities. Programs document clinical expectations at various developmental levels. Clinical expectations are directly linked to coursework throughout the program, reflect collaboration among program faculty, and are shared with candidates, supervisors and cooperating mentors.

79.20(3) Environments for clinical/field practice support learning in context and include all of the following:

a. Scheduling and use of time and resources to allow candidates to participate with practitioners and learners in the school/agency/facility setting.

b. Learning that takes place in the context of providing high-quality instructional programs for students in a state-approved school, agency, or educational facility.

c. Opportunities for candidates to observe and be observed by others and to engage in discussion and reflection on clinical practice.

d. The involvement of candidates in relevant responsibilities directed toward the work for which they are preparing.

79.20(4) PK-12 school, AEA, or facility professionals share responsibility for the selection of cooperating mentors who demonstrate appropriate skills, knowledge, and dispositions.

79.20(5) The unit is responsible for all of the following:

a. Defining qualifications for candidates entering clinical practice and for cooperating mentors who support candidates in their clinical experiences.

b. Providing quality supervision that includes primary responsibility for communication/collaboration with cooperating mentors and candidates.

c. Responding to specific needs of cooperating schools and agencies.

d. Selection, training, evaluation and support of institution faculty members who supervise candidates.

79.20(6) Accountability for clinical experiences is demonstrated through the following:

a. Collaboration between the cooperating mentor and the college/university supervisors in formative evaluation of candidates to include identifying areas for improvement, developing and implementing plans for improvement, and determining final evaluation of the candidates.

b. Use of authentic performance measures appropriate to the required assignments in the clinical experiences, with written documentation and completed evaluation forms included in candidates' permanent institutional records.

79.20(7) The institution shall enter into a written contract with each cooperating school district, AEA, or facility that provides field experiences for candidates as stipulated in Iowa Code section 272.27.

281—79.21(256) **Candidate knowledge, skills and dispositions standard.** Candidates shall demonstrate the content knowledge and the pedagogical and professional knowledge, skills and dispositions necessary to help all students learn in accordance with the provisions of the appropriate professional standards. All provisions of this standard shall be demonstrated appropriately and equitably for all programs regardless of delivery model, including programs delivered by distance learning and programs offered on campus, off campus, and through any other model of delivery.

79.21(1) Each candidate demonstrates acquisition of knowledge about and skill in interpersonal and intergroup relations that contribute to the development of sensitivity to and understanding of the values, beliefs, cultures, and attitudes of individuals and the diverse groups found in a pluralistic society. The program shall provide evidence of candidates' attainment of such knowledge and skills through the integration of these human relations and cultural competency issues within the program's coursework.

79.21(2) Each candidate meets all requirements established by the board of educational examiners for any endorsement for which the candidate is recommended, including the professional service license. Programs shall submit curriculum exhibit sheets for approval by the board of educational examiners and the department.

These rules are intended to implement Iowa Code sections 256.7, 256.16 and 272.25(1).

[Filed 10/22/99, Notice 6/30/99—published 11/17/99, effective 8/31/01]
[Filed 8/10/01, Notice 4/18/01—published 9/5/01, effective 10/10/01]
[Filed 8/12/04, Notice 3/31/04—published 9/1/04, effective 10/6/04]
[Filed 9/17/07, Notice 6/6/07—published 10/10/07, effective 11/14/07]
281—79.1 and 281—79.2 and 281—79.3 and 281—79.4 and 281—79.5 and 281—79.6 and 281—79.7 and 281—79.8 and 281—79.9 and 281—79.10 and 281—79.11 and 281—79.12 and 281—79.13 and 281—79.14 and 281—79.15 and 281—79.16 and 281—79.17 and 281—79.19 and 281—79.20 and 281—79.21

© **Iowa Legislature**

Chapter 72

Accreditation of Area Education AGENCIES

281—72.1(273) Scope. The purpose of Iowa's early childhood through twelfth grade educational system is to support learning for all students. Area education agencies, as part of that system, exist to provide leadership and equitable services for school improvement to schools and school districts in order to enable every learner to perform at higher education levels. Area education agencies are subject to accreditation by the state board of education as specified in Iowa Code section 273.10. These rules apply to the accreditation of area education agencies.

281—72.2(273) Definitions.

"AEA" is an acronym for area education agency.

"Agencywide goals" means cross–divisional desired targets to be reached over an extended period of time, derived from agencywide needs assessment and state and local student learning needs, and upon which services are focused.

"Baseline data" means information gathered at a selected point in time and used thereafter as a basis from which to monitor change.

"Board" means the Iowa state board of education.

"Department" means the state department of education.

"Director" means the state director of the department of education.

"Equitable" means that services provided by an AEA are accessible to all schools and school districts within the agency's service region.

"External knowledge base" means what is known, such as research and student achievement data, from the state or the nation about how learners in other settings perform and respond in a content area such as reading, mathematics, or science, as well as what is known about developing a learning environment that will support the desired student performance and response in a content area such as reading, mathematics, or science.

"Indicators of improvement" means internal data the agency uses to determine how well its continuous improvement processes are implemented.

"Indicators of quality" means external data sources which measure the effectiveness of services.

"School" means an accredited nonpublic school.

"School district" means a public school district.

"State indicators" means the school and school district indicators defined in 281—paragraph 12.8(3)*"a."*

281—72.3(273) Accreditation components. To be accredited by the board and maintain accreditation status, an AEA shall: provide services which meet the standards defined in rule 281—72.4(273), establish a comprehensive improvement plan as defined in rule 281—72.9(273), submit a board–approved annual budget as defined in subrule 72.10(1), and annually provide a progress report as defined in subrule 72.10(2).

281—72.4(273) Standards for services. An AEA shall provide services that meet these standards as evidenced by, but not limited to, the descriptors following each standard. These services shall be accessible to all schools and school districts within the agency's service region.

72.4(1) The AEA shall deliver services for school–community planning. The AEA assists schools and school districts in assessing needs of all students, developing collaborative relationships among community agencies, establishing shared direction, implementing actions to meet goals, and reporting progress towards goals.

72.4(2) The AEA shall deliver professional development services for schools, school districts and AEA instructional, administrative, and support personnel. The AEA anticipates and responds to schools' and school districts' needs; supports proven and emerging educational practices; aligns with school and school district comprehensive long–range and annual improvement goals; uses adult learning theory; supports improved teaching; uses theory, demonstration, practice, feedback, and coaching; and addresses professional development activities as required by the Iowa Code or administrative rules.

72.4(3) The AEA shall deliver curriculum, instruction, and assessment services that address the areas of reading, language arts, mathematics, and science but may also be applied to other curriculum areas. These services support the development, implementation, and assessment of rigorous content standards in, but not limited to, reading, mathematics, and science. The AEA assists schools and school districts in gathering and analyzing student achievement data as well as data about the learning environment, compares those data to the external knowledge base, and uses that information to guide school and school district goal setting and implementation of actions to improve student learning.

72.4(4) The AEA shall address the diverse learning needs of all children and youth, including but not limited to services which address gifted and talented students, and meet the unique needs of students with disabilities who require special education. Services provide support to schools and school districts and include special education compliance with Iowa administrative rules for special education.

72.4(5) The AEA shall provide services that support multicultural, gender–fair approaches to the educational program pursuant to Iowa Code section 256.11. These services assist schools and school districts to take actions that ensure all students are free from discriminatory acts and practices; to establish policies and take actions that ensure all students are free from harassment; to incorporate into the educational program instructional strategies and student activities related to responsibilities, rights, and the respect for diversity which are necessary for successful citizenship in a diverse community and a global economy; and to incorporate on an ongoing basis activities within professional development that prepare and assist all employees to work effectively with diverse learners.

72.4(6) The AEA shall deliver media services. These services align with school and school district needs, support effective instruction, and provide consultation, research and information services, instructional resources, and materials preparation and dissemination to assist schools and school districts to meet the learning needs of all students and support local district media services. These services support the implementation of content standards in, but not limited to, reading, mathematics, and science. These services also support and integrate emerging technology.

72.4(7) The AEA shall supplement and support effective instruction for all students through school technology services. These services provide technology planning, technical assistance, and professional development, and support the incorporation of instructional technologies to improve student achievement. These services support the implementation of content standards in,

but not limited to, reading, mathematics, and science. These services support and integrate emerging technology.

72.4(8) The AEA shall deliver services that develop leadership based upon the Iowa Standards for School Administrators as adopted by the board of educational examiners. Leadership services assist with recruitment, induction, retention, and professional development of educational leaders. AEAs develop and deliver leadership programs based on local and state educational needs and best practices.

72.4(9) The AEA shall deliver management services if requested. If the AEA provides management services to school districts, the services shall conform to the provisions of Iowa Code section 273.7A.

281—72.5 to 72.8 Reserved.

281—72.9(273) Comprehensive improvement plan. Each AEA, on a cycle established by the department, shall submit to the department a comprehensive improvement plan. The plan shall be the basis for the improvement actions taken by the agency and shall also serve as a basis for the comprehensive site visit.

72.9(1) *Comprehensive improvement plan contents.* At a minimum, the comprehensive improvement plan for an AEA shall include the following:

a. Needs assessment. The plan shall contain a description of how the AEA conducts ongoing needs assessment.

b. Needs assessment summary. The plan shall contain a summary of the findings from agencywide needs assessment. The summary, at a minimum, shall include the following:

(1) Findings from AEA internal needs assessment which includes, at a minimum, four indicators of improvement:

1. Implementation of a continuous improvement model;

2. Implementation of services that respond to schools' and school districts' needs;

3. Demonstration of proactive leadership;

4. Use of data to implement actions to improve student learning;

(2) Findings from school and school district state indicator data;

(3) Findings from reviews of school and school district comprehensive school improvement plans;

(4) Findings from the department's comprehensive site visit reports to schools and school districts;

(5) Findings from AEA comprehensive site visit reports; and

(6) Findings from the department's statewide customer service survey.

c. Agencywide goals. The plan shall contain agencywide goals developed as a result of needs assessment findings. Agencywide goals shall be measurable and, at a minimum, focused on assisting schools and school districts with the school improvement process and improving teaching and learning as evidenced in the indicators of quality as prescribed in subrule 72.10(2).

d. Services. The plan shall describe the services developed to meet agencywide goals and to meet the standards defined in this chapter.

e. Action plans. The plan shall include agencywide actions to accomplish agencywide goals. Action plans shall include evidence of meeting all standards for services. Action plans shall include provisions for equitable availability of services. The agencywide action plans shall include, at a minimum, the following components:

(1) Agencywide data sources;

(2) Agencywide baseline data;

(3) Services to meet the agencywide goals;

(4) Agencywide resources, which include funding, staff allocation, and time and may be delivered directly, through contractual agreements, and through collaborative arrangements with other educational or community agencies;

(5) Agencywide responsible parties that will monitor the implementation of services in the action plan;

(6) A system for measuring the efficiency and effectiveness of services; and

(7) A process for reporting progress toward agencywide goals.

f. Provisions for management services. If the AEA provides management services to school districts, the plan shall include a description of how the agency provides those services as described in Iowa Code section 273.7A.

g. Professional development plan. The plan shall contain a summary of the agencywide professional development plan developed pursuant to 281—subrule 83.6(2).

72.9(2) *Plan submission and cycle.* Rescinded IAB 9/5/01, effective 10/10/01.

72.9(3) *Comprehensive improvement plan review process.* The comprehensive improvement plan of an AEA shall be reviewed by the department to determine if the plan meets the requirements of this chapter. An AEA will be provided reasonable time to correct any deficiencies.

281—72.10(273) Annual budget and annual progress report. Each AEA shall submit to the board an annual budget as required by Iowa Code section 273.3 and shall provide an annual progress report on the indicators of quality and the agencywide goals.

72.10(1) *Annual budget.* An annual budget shall be submitted by an AEA accredited by the board or an AEA that has been given conditional accreditation by the board as described in Iowa Code section 273.3(12) and subrule 72.11(4) to the board for approval, on forms provided by the department, no later than March 15 preceding the next fiscal year. The board shall review the proposed budget and shall, before April 1, either grant approval or return the budget without approval with comments of the board included. An unapproved budget shall be resubmitted to the board for final approval no later than April 15.

72.10(2) *Annual progress report.* An AEA shall annually submit a written progress report to its schools and school districts and the department and make the report available to the public. The report shall include, but not be limited to, the following information:

a. Agencywide goals. Progress, at a minimum, toward the agencywide goals described in paragraph 72.9(1)*"c"* shall be reported. This progress shall include agencywide baseline data and changes in the baseline data as a result of services provided in each action plan.

b. Indicators of quality. Aggregated agencywide data shall include baseline data and trends over time for the following indicators of quality from, at a minimum, the state indicators, the statewide customer service survey, school and school district comprehensive school improvement plans, and school and school district annual progress reports:

(1) Targeted assistance. An AEA assists schools and school districts with specific student, teacher, and school needs evidenced in local school improvement plans by:

1. Addressing teacher, school and school district needs.

2. Responding to student learning needs.

(2) Improved student learning. An AEA assists schools and school districts in:

1. Improving student achievement in mathematics.

2. Improving student achievement in reading.

3. Improving student achievement in science.

4. Reducing student achievement gaps in mathematics.

5. Reducing student achievement gaps in reading.

6. Reducing student achievement gaps in science.

7. Reducing dropout rates.

8. Preparing students for postsecondary success.

9. Planning to ensure that students complete a core program.

(3) Improved teaching. An AEA assists schools and school districts in improving teaching in the following areas:

1. Mathematics.

2. Reading.

3. Science.

(4) Resource management. An AEA assists schools and school districts:

1. By delivering cost–efficient services.

2. By timely delivery of services.

(5) Customer satisfaction with services. An AEA determines customer satisfaction through:

1. High levels of participation.

2. High levels of customer satisfaction with quality of AEA services.

(6) Annual progress report review process. The annual progress report of an AEA shall be reviewed by a team appointed by the director. Following the review of an AEA's report, feedback will be provided to the agency.

281—72.11(273) Comprehensive site visit.

72.11(1) *On–site review.* An accreditation team shall conduct one or more on–site reviews of the AEA's progress toward agencywide goals and shall determine if services meet the standards in this chapter. Prior to an on–site review of an AEA, the accreditation team shall have access to the

AEA's comprehensive improvement plan, annual progress report, and annual budget as well as any other information collected by the department relating to the AEA.

72.11(2) *Accreditation team.* The membership of the accreditation team shall be determined by the director. Each team member should have appropriate competencies, background, and experiences to enable the member to contribute to the evaluation visit. The team shall include at least four members, including, but not limited to:

a. Department staff.

b. Representatives from various sizes of schools and school districts served by the AEA being evaluated.

c. AEA staff from other AEAs.

d. Others with expertise as deemed appropriate by the director.

72.11(3) *Accreditation team action.* After an on–site review of an AEA, the accreditation team shall determine whether the requirements of this chapter have been met and shall make a report to the director identifying which standards and other accreditation requirements in this chapter an AEA has or has not met. The accreditation team shall report strengths and weaknesses, if any, for each standard or requirement, and shall advise the AEA of available resources and technical assistance to further enhance the strengths and improve areas of weakness. An AEA may respond to the accreditation team's report by providing to the board factual information concerning its services.

72.11(4) *Accreditation.* All AEAs shall be deemed accredited upon the date of implementation of these rules. Accreditation of an AEA by the board shall be based on the recommendation of the director after study of the factual and evaluative evidence on record about the standards and other requirements as described in this chapter and based upon the timely submission of information required by the department. If, at any time, the board determines that an AEA has not met all standards and other requirements, the board shall require the AEA to address the deficiencies.

a. Accreditation status. After completion of the comprehensive site visit under rule 281—72.11(273), the board shall grant continuation of accreditation if all standards and other requirements are met. If the board determines that an AEA has not met all standards and other requirements, the board shall grant conditional accreditation to the agency.

b. Conditional accreditation. If the board grants conditional accreditation, the department shall notify the administrator of the AEA and each member of the board of directors of the AEA within 15 days. The notice shall contain a description of the accreditation deficiencies.

c. Remediation plan. Upon granting of conditional accreditation by the board, the director, in cooperation with the board of directors of the AEA, shall establish a remediation plan. The remediation plan shall describe how the AEA will correct deficiencies to meet accreditation standards and shall establish a timeline and deadline date for correction of the deficiencies. The remediation plan is subject to the approval of the board. The AEA shall remain conditionally accredited during the implementation of the remediation plan.

d. Implementation of remediation plan. At intervals prescribed in the remediation plan or at the request of the director, the accreditation team shall revisit the AEA and shall determine whether the deficiencies in the accreditation standards are being or have been corrected and shall make a

report and recommendation to the director and the board. The board shall review this report and recommendations and shall determine whether the deficiencies have been corrected.

e. Failure to correct deficiencies. If the deficiencies have not been corrected within the time stipulated in the remediation plan, the board shall remove accreditation of the agency. At the hearing before the board, the AEA may be represented by counsel and may present evidence. The board may provide for the hearing to be recorded or reported. If requested by the AEA at least 10 days before the hearing, the board shall provide for the hearing to be recorded or reported at the expense of the AEA. Within 30 days after the hearing, the board shall render a written decision approving or removing the accreditation. Action by the board at this time is final agency action for the purposes of Iowa Code chapter 17A. The department shall notify the administrator of the AEA, each member of the board of directors of the AEA, and the schools and school districts served by the AEA of the decision of the board.

f. Required response to removal of accreditation. After removal of accreditation of the agency, the AEA board of directors shall make provisions for the continuation of services to schools and school districts subject to approval by the state board of education.

These rules are intended to implement Iowa Code section 273.10.

RTTT Letters of Support

Iowa Area Education Agencies AEA 267 Grant Wood AEA Great Prairie AEA Green Hills AEA Heartland AEA Keystone AEA Mississippi Bend AEA Northwest AEA Prairie Lakes AEA
Iowa Association of Community College Trustees
Iowa Braille and Sight Saving School
Iowa Business Council
Iowa Parent Teacher Association
Iowa Senate Majority Leader Michael Gronstal
Iowa State Education Association
Iowa School for the Deaf
Iowa's Special Education Advisory Panel
Iowa Workforce Development
School Administrators of Iowa
School Administrators of Iowa, Wallace Leadership Grant for Iowa
The Greater Des Moines Partnership
The University of Iowa
The University of Iowa, College of Education, Realizing Educational & Career Hopes Program
University of Northern Iowa
University of Northern Iowa, Department of Special Education
University of Northern Iowa, Department of Special Education, Center for Disability Studies in Literacy, Language, & Learning
Urban Education Network

Iowa Area Education Agencies
PARTNERS IN EDUCATION

January 11, 2010

The Honorable Chet Culver
Office of the Governor
State Capitol
1007 East Grand Avenue
Des Moines, IA 50319

Dear Governor Culver,

Iowa's AEAs were established by the 1974 Iowa Legislature to provide equitable, efficient and economical educational opportunities for all Iowa children. Iowa's AEAs provide special education support services, media and technology services, a variety of instructional services, professional development, and leadership to help improve student achievement. Iowa's AEAs serve as intermediate units that provide educational services to local schools and are widely regarded as one of the foremost regional service systems in the country.

Iowa's AEAs extensively collaborate with the Department of Education to help promote change in education. School improvement efforts have been supported and implemented through the partnership between the Iowa Department of Education and the AEAs. The primary goals are to emphasize student achievement and accountability. The Department of Education and Iowa's AEAs work as educational partners with public and accredited private schools to help students, staff, parents and communities meet the school improvement challenges.

The ten AEAs in Iowa have concentrated heavily on working together as a state system over the past five years. A perfect example of this is the systematic implementation of the Iowa Core Curriculum with the Iowa Department of Education, which addresses the standards and assessment criteria in the Race To The Top grant. Currently, AEA staff lead the Schools In Need of Assistance (SINA) program for the state of Iowa. Teams of AEA staff work with the individual schools that have been identified and help them work through the audit process and design a plan of action to help turn their school around. This grant would allow further implementation of the plans already designed for schools in our area that have been identified through the SINA process.

Each of the ten AEA Chief Administrators unanimously support the State of Iowa's application and we highly encourage you to select Iowa as a grant recipient. We believe that as an integrated AEA system, with the Department of Education, we can build capacity and help bring to scale all of the components of the Race To The Top grant.

Educationally Yours,

Timothy S Grieves, Ph.D.
Chair, Iowa AEA Chief Administrators

Brent Siegrist
Director of State AEA Services

AEA 267
AREA EDUCATION AGENCY
leadership in learning

January 8, 2010

The Honorable Chet Culver
Office of the Governor
State Capitol
1007 East Grand Avenue
Des Moines, IA 50319

Dear Governor Culver:

This letter is being written in support of the Iowa Department of Education's application for initial funding for the Race to the Top grant. AEA 267 is in full support of the Department of Education's application and fully committed to working with the Department in its implementation.

AEA 267 is one of nine AEAs in Iowa. We provide services to 60 school districts in north-central Iowa with a focus on special education; curriculum, instruction and assessment and supporting professional development; and technology and media services. Our mission is to "...build the capacity of educators, parents, and students .... to improve student achievement."

AEA 267 has a long history of working collaboratively with the Iowa Department of Education and the other eight AEAs in Iowa to implement school improvement innovations and initiatives. Currently, this statewide collaborative effort has focused on the implementation of the Iowa Core Curriculum. This powerful collaboration is moving this initiative forward in a manner that is much more effective than either the Department or an individual AEA could do on their own.

I believe the educational culture, based upon extensive collaboration among the Department of Education, the Iowa AEA system, and the Local School Districts, is well positioned to make effective use of the additional support a successful RTTT application could bring. I would encourage those making decision about RTTT grants give Iowa its fullest consideration.

Sincerely,

Dean Meier

Dean W. Meier, Ed.D.
Chief Administrator
AEA 267
Cedar Falls, Iowa 50613

Our Promise to our Educational Partners:
We provide educational leadership, services, and support to the children, families, and educators we serve to build their capacity to positively impact and increase student achievement.

AEA 267
AREA EDUCATION AGENCY
leadership in learning

January 13, 2010

To Whom It May Concern:

At their January 12, 2010 monthly board meeting, the AEA 267 Board of Directors unanimously passed the following resolution:

> The AEA 267 Board of Directors is in full support of the Iowa Race to the Top Application and the Agency will extend its full support to the implementation of the program.

Sincerely,

Dean Meier, Ed.D.
Chief Administrator
AEA 267

GRANT WOOD
AREA EDUCATION AGENCY

January 6, 2010

The Honorable Chet Culver
Office of the Governor
State Capitol
1007 East Grand Avenue
Des Moines, IA 50319

Dear Governor Culver,

As you know, the AEAs are a statewide system, created by the Iowa Legislature 35 years ago in response to the Students with Disability Act. The AEAs play an integral part in providing support to education of all of Iowa's students – including those in public, private, charter and home schools. The legislators who created the AEA system in Iowa envisioned a partnership between the AEAs and educators where the AEAs provide not only special education support services, but also library resources, technology and technology support, teaching improvement through professional development, and various cost-efficiencies for the schools.

Each of the AEAs in this state have dedicated their resources toward improving instruction in Iowa's schools, thus helping each of the districts meet the state's performance plan under No Child Left Behind. Where needed, the AEAs have helped trouble-shoot with schools and districts identified as being in need of assistance. The AEAs have also committed themselves to helping with the development and rollout of the Iowa Core Curriculum, including the very important development of 21st Century skills among Iowa students. The AEAs continually serve as change agents in the Iowa education system, helping teachers, administrators, school boards and districts to find new and better ways to educate children in our service areas.

We are excited by what we see evolving in our state as a result of the work on the Iowa Core. We believe the implementation of the Iowa Core Curriculum throughout Iowa's schools will play a significant part in preparing our students for becoming leaders in the 21st Century. We anticipate the quality of education in Iowa, which has always been near the top in the nation for many years, will improve even more. We also believe this work will create a model of excellence for education in rural states, which could be replicated in other states.

I know I speak not only for my agency but for all AEAs in the state when I tell you how excited we are to get involved in the Race to the Top program. We will work diligently with the Department of Education, the Regent institutions, business partners and social agencies to draw together all of our state's resources toward making this effort a success.

Sincerely,

Ronald S. Fielder, Ph.D.
Chief Administrator

Grant Wood Area Education Agency • 4401 6th St SW • Cedar Rapids, IA 52404-4499 • Phone: 319-399-6700

Great Prairie
AREA EDUCATION AGENCY

2814 North Court Street
Ottumwa IA 52501-1163
641-682-8591 • 800-622-0027
FAX: 641-682-9083

3601 West Avenue Road
Burlington IA 52601-1065
319-753-6561 • 800-382-8970
FAX: 319-753-1527

January 7, 2010

The Honorable Chet Culver
Office of the Governor
State Capitol
1007 East Grand Avenue
Des Moines, IA 50319

Dear Governor Culver,

As Chief Administrator of Great Prairie Area Education Agency, I write this letter in support of the Iowa Department of Education's application for initial funding for the Race to the Top grant. Great Prairie AEA provides leadership and support to more than 38,000 students, 3,700 teachers and administrators, and 35 school districts in southeast Iowa.

Great Prairie AEA is committed to improve student achievement. Iowa's AEAs were established by the 1974 Iowa Legislature to provide equitable, efficient and economical educational opportunities for all Iowa children. We work as educational partners with public and accredited private schools to help students, staff, parents and communities meet the school improvement challenges.

Iowa's priorities and goals for Race to the Top directly correlate with the work that we do as an AEA system. We extensively collaborate with the Department of Education to help promote change in education. As professional educators we understand the need for change in curriculum, instruction and assessment for the 21st century learner. We work with local schools to implement innovative approaches to teaching and learning, as well as gather data to inform and improve instruction and delivery.

Great Prairie AEA is committed to collaboratively working to implement the plans that Race to the Top funding will help Iowa achieve. Iowa is a leader in the field of education, and we believe with Race to the Top funding, we will continue to lead and impact the youth of our nation.

Sincerely,

Joseph M. Crozier, Chief Administrator
Great Prairie Area Education Agency

January 8, 2010

The Honorable Chet Culver
Office of the Governor
State Capitol
1007 East Grand Avenue
Des Moines, IA 50319

Dear Governor Culver:

The newly merged Green Hills Area Education Agency provides support services to the schools of Southwest Iowa. These schools represent a large percentage of low socio-economic population students. As a member of the AEA system of support to the department and schools, we are deeply involved in every aspect of education in Iowa.

Green Hills AEA is deeply committed to improving the lives of each student within our geographic region. As part of our commitment to our students, we fully support and affirm our involvement in the statewide system of support to implement the state's application for Race to the Top efforts. As an agency, and as a state, much work has already been done that aligns with what is being looked for in the RTTT grant.

Because of our student population and their needs, Green Hills AEA will be focusing upon improving low performing schools and increasing student achievement. We have devoted many resources to the implementation of the Iowa Core curriculum and believe the state's application reflects our mission to support all learners. We believe that major changes will occur for students when we are able to fundamentally change the teaching and learning process within our schools. Iowa's RTTT efforts will help ensure such fundamental changes will occur.

As a newly formed AEA our staff are looking forward to being part of the statewide system of support to the children of Iowa. We are pleased with how Iowa's many educational efforts are coming into alignment to achieve the goals of Race to the Top.

Sincerely,

Glenn Grove
Acting Chief Administrator
Green Hills AEA

Green Hills AEA • P.O. Box 1109 • Council Bluffs, IA 51502-1109
712-366-0503 • 1-800-432-5804 • FAX 712-366-7772

HEARTLAND
AREA EDUCATION AGENCY

6500 Corporate Drive, Johnston, IA 50131-1603 • Phone (515) 270-9030 • (800) 362-2720 • Fax (515) 270.5383

January 13, 2010

The Honorable Chet Culver
Office of the Governor
State Capitol
1007 East Grand Avenue
Des Moines, IA 50319

Dear Governor Culver,

I am writing to show Heartland Area Education Agency's (AEA) support of the Iowa Department of Education's upcoming application for our state's participation in the Race to the Top (RTTT) grant competition. Heartland AEA provides services to 133,000 students in 54 public school districts and 29 accredited non-public schools in critical areas such as curriculum, instruction and assessment, school leadership, instructional technology, special education and professional development. These services are provided in partnership with our schools and are focused on improving teaching and learning.

Iowa's participation in RTTT would allow educators throughout the state to develop infrastructures and programs that will create new, more effective learning environments that in turn will enable Iowa students to acquire the essential concepts and skills of the Iowa Core Curriculum. Ultimately, improvements to our system enabled by RTTT will allow Iowa students to compete successfully in the global economy.

I have read the overview of the Department of Education's RTTT application and a number of components are particularly impressive, especially projects that would support Iowa's continued work toward a competency-based, outcome-driven education system. The Iowa Core Curriculum is the vehicle for this change and what is needed now is a sustained focus on resources and tools that will help this vision come to life. As a state, Iowa is uniquely positioned to implement required components of RTTT. In particular, Iowa has:

a) Unique relationships between the Department of Education, AEAs, school districts and institutes of higher education that allow efficient and effective delivery of education innovations on a broad scale throughout the system.
b) A commitment to becoming outcome-driven in our approach to improving our schools.
c) A commitment to developing and implementing an integrated system of curriculum, instruction and assessment that adheres to high standards of rigor.
d) A commitment to not only improving teacher performance, but to improving the performance of school leaders.

Heartland AEA is committed to working in partnership with both the Department of Education and our schools to implement the components of Iowa's RTTT plan. We will commit appropriate resources to RTTT projects, provide leadership for development of major RTTT components and make the success of RTTT activities a major priority for our agency. I am pleased to endorse the Department of Education's RTTT proposal, and I encourage reviewers to give this proposal serious consideration. If there is any additional information I can provide regarding Heartland AEA's commitment to the RTTT proposal, please do not hesitate to contact me.

Cordially,

Sheila King
Interim Chief Administrator
sking@aea11.k12.ia.us

Extending your reach.

Heartland Area Education Agency 11 does not discriminate based on gender, race, national/ethnic origin, creed, age, marital status, sexual orientation, or disability. Direct inquiries to the Affirmative Action Coordinator, 6500 Corporate Dr., Johnston, IA 50131-1603, or Director, Office for Civil Rights, Chicago, IL 60606-7204.

Keystone Area Education Agency
Administration
1400 2nd St. NW • Elkader, IA 52043-9564
Phone: 563-245-1480 • FAX: 563-245-1484

Improving Learning And Living For All Students

January 8, 2010

The Honorable Chester Culver
Office of the Governor
State Capitol
1007 East Grand Avenue
Des Moines, Iowa
50319

Dear Governor Culver:

The purpose of this letter is to offer our support for the Iowa Department of Education as they submit a Race to the Top Grant proposal.

Keystone Area Education Agency serves 24 public school districts in northeast Iowa. We have staff dedicated to providing services in the areas of school community planning, professional development, curriculum, instruction and assessment, special education, instructional media, school technology, and school leadership among others.

Our 275 staff members are committed to continue to provide high quality services in the areas described above to local district staff and students in all of our districts with special emphasis on the components of the Race to the Top initiative.

Moreover, we intend to establish a strong collaborative relationship with the Iowa Department of Education and all of the other Area Education Agencies in an attempt to make the Race to the Top initiative truly meaningful for each of our participating districts.

Sincerely,

Robert Vittengl, Ph.D.
Chief Administrator

Mississippi Bend
AREA EDUCATION AGENCY
Improving teaching & learning

729 - 21st Street • Bettendorf, Iowa • 52722-5096
563-359-1371 • 800-947-AEA9
Fax: 563-359-5967 • TDD 563-344-6281
www.aea9.k12.ia.us

January 5, 2010

The Honorable Chet Culver
Office of the Governor
State Capitol
1007 East Grand Avenue
Des Moines, IA 50319

Dear Governor Culver:

I am writing to confirm Mississippi Bend Area Education Agency's commitment to the *Race to the Top* innovative system reform efforts. The Agency's interest in the project grows out of the critical system reform delivery role for Iowa's area education agencies described within the application. The Agency has appreciated the Department's involvement of all stakeholders in the application's design process to ensure commitment to the statewide reform efforts.

The Agency is committed to: providing support and coaching so that schools and school districts can implement the Iowa Core Curriculum through a competency-based system; facilitating and sustaining balanced assessment systems at the district, school, and classroom level; delivering high quality professional development and capacity building to implement the adopted intervention models; and training leaders to initiate program evaluation processes to create productive feedback loops to inform school level decisions.

Given the long history of school improvement collaboration between the Agency and the Department, I am pleased to lend the Agency's resources and expertise to the successful implementation of the *Race to the Top* project.

Sincerely,

Glenn M. Pelecky, Ed.D.
Chief Administrator

January 11, 2010

The Honorable Chet Culver
Office of the Governor
State Capitol
1007 East Grand Avenue
Des Moines, IA 50319

Dear Governor Culver,

Northwest AEA is one of ten area education agencies that provide equitable, efficient and economical educational opportunities for both public and accredited private schools in northwest Iowa. We serve ten counties and approximately 43,000 students in our area. Northwest AEA provides special education support services, media and technology services, a variety of instructional services, professional development, and leadership to help improve student achievement.

Serving as a partner with local schools, Northwest AEA has a keen interest in providing quality professional development for teachers and quality services for students. Northwest AEA's mission is to provide visionary leadership and quality student-centered services through relationships with families, schools and communities. We are highly committed to provide responsive services in the areas of special education, media and educational services and professional development.

We are very supportive of the state's efforts to acquire a Race To The Top grant so that students in Iowa can continue to receive a quality education. We need to secure all resources available to help our children compete in a global economy. Northwest AEA has helped our local schools implement the Iowa Core Curriculum in collaboration with the Iowa Department of Education. Our staff lead the Schools In Need of Assistance (SINA) program for the state of Iowa. Teams of AEA staff work with the individual schools that have been identified to help the schools work through the audit process and design a plan of action to help turn their school around. This grant would allow further implementation of the plans already designed for schools in our area that have been identified through the SINA process.

Northwest AEA is committed to partner with local schools and the Department of Education to increase student achievement in our area. This has been our belief for the last 35 years, since the AEA's inception. We are enthused to have this grant opportunity so that we can increase our capability to provide these services in a collaborative way with our school districts.

Educationally Yours,

Timothy S Grieves, Ph.D.
Chief Administrator
Northwest AEA

Prairie Lakes
Area Education Agency

January 11, 2010

The Honorable Chet Culver
Office of the Governor
State Capitol
1007 East Grand Avenue
Des Moines, IA 50319

Dear Governor Culver,

Prairie Lakes Area Education Agency is one of 10 intermediate service agencies serving Iowa's public and accredited non-public schools. Prairie Lakes works in partnership with our local schools to identify and meet the needs of students in order to ensure maximum achievement for all. We provide special education support services and direct service to students and children ages birth through 21 along with professional development and instructional resources (including technology resources) for all educators (pre-K through 12th grade.)

Iowa is primarily a rural state and Prairie Lakes AEA serves a rural area of this state with the unique challenges and strengths of culture that are indigenous to rural regions. Declining enrollments have been the incentive for increased sharing and collaboration among our school districts and stronger partnerships between the AEA and the local schools. At Prairie Lakes we are committed to the efficient use of resources to ensure that our students achieve at the highest levels and use their knowledge and work ethic to overcome a growing problem of rural poverty.

Of particular promise for Prairie Lakes AEA in the RTTT proposal is the emphasis on innovation to create new learning opportunities and new learning environments. The proposed **Centers of Excellence** provide the opportunity to garner the expertise in our state in the most effective manner and to work statewide for collaborative implementation of the best practices to deepen the capacity for and the success of implementation.

Iowa has a strong history of integrated coordination to achieve focused initiatives for school improvement. The relationship between the Department of Education, the Area Education Agencies, local schools, and the various professional organizations allows ongoing dialogue and collaborative efforts on behalf of our students. The Race to the Top proposal has brought continued focus to the next level of work in Iowa and funding will make implementation possible in a reasonable timeline. I am excited about the potential of this work and support this grant proposal.

Sincerely,

Kay Forsythe

L. Kay Forsythe, Ph.D.
Chief Administrator

IACCT

IOWA ASSOCIATION of COMMUNITY COLLEGE TRUSTEES

855 East Court Avenue
Des Moines, Iowa 50309

Phone: (515) 282-4692
Fax: (515) 282-3743

Area I
Northeast Iowa
Community College

Area II
North Iowa Area
Community College

Area III
Iowa Lakes
Community College

Area IV
Northwest Iowa
Community College

Area V
Iowa Central
Community College

Area VI
Iowa Valley
Community College
District

Area VII
Hawkeye
Community College

Area IX
Eastern Iowa
Community College
District

Area X
Kirkwood
Community College

Area XI
Des Moines Area
Community College

Area XII
Western Iowa Tech
Community College

Area XIII
Iowa Western
Community College

Area XIV
Southwestern
Community College

Area XV
Indian Hills
Community College

Area XVI
Southeastern
Community College

January 8, 2010

The Honorable Chet Culver
Office of the Governor
State Capitol
1007 East Grand Avenue
Des Moines, IA 50319

Via email: bonnie@westwinded.co

Dear Governor Culver,

As Chairs of the Iowa Associations of Community College Trustees and Presidents, we write to express our support of Iowa's participation in the *Race to the Top*. The Community Colleges not only have close ties with Iowa's K12 systems and students, but we are invested strongly in helping all Iowa students obtain the skills needed for success in the competitive global world.

Singly and as a group, Iowa's Community Colleges are ready to join in a serious effort to move our state's and our nation's educational systems into the future. We support the drive to retain and graduate more students, to smooth their transition to college education, and to support them to attainment of higher level certificates/degrees. As open door institutions, we share a commitment to not only increase access to college but to significantly improve college student achievement. Iowa's plan to make the best quality K12 education available to all students, no matter where they reside, is something the Community Colleges can help with since we span the state. We work closely with area superintendents and Area Education Associations to articulate our programs with high schools, to offer opportunities to begin college to numerous high school juniors and seniors, and to help prepare teachers who make a difference in our schools.

We have carefully reviewed Iowa's plan to support the *Race to the Top* for Iowa students and we plan to support all of its goals. In particular, Iowa's Community Colleges hope to engage in the innovative new teaching and learning models/formats that span K12 through college. Because we so often work with "at-risk" students, and provide a second chance for high school drop-outs, we are eager to assist in any efforts to increase the chances of success for these underachieving students.

Iowa's Community Colleges are committed to working singly and as a group to support the implementation of the plans outlined in Iowa's *Race to the Top* proposal.

Sincerely,

Conrad Dejardin

Conrad Dejardin
Chair Iowa Association of
Community College Trustees
Trustee Iowa Valley Community
College District

Patricia A. Keir

Dr. Patricia Keir
Chair, Iowa Association of
Community College Presidents
Chancellor, Eastern Iowa Community
College District

Iowa Braille and Sight Saving School

1002 G Avenue • Vinton, Iowa 52349
319.472.5221 • Fax 319.472.4371
Within Iowa 1.800.645.4579
www.iowa-braille.k12.ia.us

Our mission is to enable Iowa's students who are blind or visually impaired to function as independently as possible in all aspects of life by providing appropriate educational opportunities, resources, and support services.

Board of Regents, State of Iowa School

January 12, 2010

The Honorable Chet Culver
Office of the Governor
State Capitol
1007 East Grand Avenue
Des Moines, IA 50319

Dear Governor Culver,

I write this letter of support of the application for the Race to the Top initiative on behalf of the Statewide System for Vision Services, the Iowa State system for supporting the education of children and youth that are blind or visually impaired. This Statewide System provides education instructional and support services to students across the state. This Statewide System is an innovative approach to meeting the educational needs of this low incident population.

The Statewide System for Vision Services is a partnership with the local schools districts, intermediate Area Education Agencies, Department of Education and the Department for the Blind empowered to ensure access to quality educational services for all students' birth to twenty one who are blind or visually impaired. We commit to work with these partner agencies to implement and meet the priorities of the Race to the Top initiatives. Our partnership certainly includes leadership in closing the gap in performance for low-achieving schools and in the implementation of competency-based instruction.

The Statewide System for Vision Services is a new organizational structure that may provide a model for other State initiatives in the Race to the Top priorities. The Statewide System personnel hold expertise in the development of content and the design of instruction and assessment and we are prepared to work in collaboration with others to advance the full implementation of the Iowa Core.

Iowa continues to be a leader in education and thus is well suited to lead the implementation of the Race to the Top initiatives. On behalf of the Statewide System for Vision Services I commit the resources, including the expertise of our personnel, to advance the implementation of the Race to the Top priorities.

Sincerely,

Patrick D. Clancy
Superintendent of the Iowa Braille School
Administrator for the Statewide System for Vision Services

An Equal Opportunity/Affirmative Action Employer

Iowa Business Council

100 East Grand Avenue, Suite 160, Des Moines, Iowa 50309

Phone: 515-246-1700
Fax: 515-246-1701
E-mail: ibc@iowabusinesscouncil.org
Web site: www.iowabusinesscouncil.org

January 7, 2010

Melvin R. Haught
Chair

Thomas L. Aller
Vice Chair

John K. Sorensen
Treasurer

Max A. Phillips
Immediate Past Chair

Benjamin J. Allen, Ph.D.

Stan A. Askren

W. Kim Austen

William J. Fehrman

John D. Forsyth

Gregory L. Geoffroy, Ph.D.

Clayton M. Jones

Richard N. Jurgens

William B. Leaver

Sally Mason

Dean C. Oestreich

Mark C. Oman

Jean E. Robillard, M.D.

John Ruan III

Barry W. Schaffner

James T. Sutter

David H. Vellinga

Robert L. Vermeer

Larry D. Zimpleman

Elliott G. Smith

The Honorable Chester J. Culver
Office of the Governor
State Capitol
1007 East Grand Avenue
Des Moines, Iowa 50319

Re: Application by the State of Iowa to the U.S. Department of Education for *Race To The Top* Funding

Dear Governor Culver,

The Iowa Business Council offers its strong support to the efforts of your office and the Iowa Department of Education to secure early funding for the Obama Administration's *Race To The Top* initiative administered by the U.S. Department of Education.

The ability of Iowa business to succeed in the intensely competitive environment of the world marketplace will depend on the skills and knowledge of its workforce. Continued movement toward a technology-driven economy has created a critical need for Iowa's workers of the future to be proficient in math, science, reading, comprehension, and other disciplines. Quality teachers and a strong education system are paramount to building the future workforce base. It is also essential to have healthy and vibrant post-secondary education institutions that promote research and development, catalyze innovation, and incent commercialization while supplying the state with the intellectual capital necessary for a knowledge-based economy.

The Iowa Business Council supports changes in the delivery of Iowa's preK-16 education system that will:

- drive administrative efficiency throughout
- spur student achievement in key subject areas, e.g., math, science, reading, problem solving, creative thinking, team building, cultural awareness, foreign languages, financial literacy
- promote excellence and ethics in all aspects of performance and moral character strengths needed for 21st Century skills, e.g., effort, diligence, work ethic, positive attitude, self-discipline, honesty, respect, dependability, integrity
- encourage and facilitate professional development for teachers and merit-based assessment of their performance
- enhance a meaningful lifelong learning experience

In turn, sustainable funding resources must be established for other value-added areas such as teacher compensation, reductions in student tuition, and certified early childhood education for all children.

The Iowa Department of Education has extensive experience engaging leaders from business, government, education, and communities around Iowa to encourage and promote the implementation of innovative, rigorous core curriculum subject matters. Representatives of Iowa Business Council member companies and institutions have collaborated with the Department over the years to identify methods of outreach and secure sustainable resources for motivating primary and secondary school-age students to participate in a broad-based core course of study. The *Race To The Top* initiative evidences exceptional beneficial promise for the education system in Iowa as well as the long-term welfare of the business community in this state.

With every confidence of achieving these outcomes, the Iowa Business Council commits to working with you, Governor, and the Iowa Department of Education to effectively align and implement the plans that *Race To The Top* funding will help achieve. The Council firmly believes the dedicated education and business leaders of this state will serve the *Race To The Top* initiative with honor and distinction. My signature below represents support for this designation by many of the state's largest corporations and universities.

On behalf of the members of the Iowa Business Council,

(b)(6)

Tom Aller
Chair, Iowa Business Council
President, Interstate Power and Light Co., an Alliant Energy company

cc: Judy Jeffrey - Director, Iowa Department of Education

* * * * * * * * * * * * * * * * * * * *

Founded in 1985, the Iowa Business Council is a non-partisan, non-profit, self-funded organization whose members include the top executives of 20 of the largest businesses in the state, the three Regent university presidents, and the state's largest banking association. The purpose of the Council is to engage the personal commitment of these executives in active leadership roles on major initiatives that offer opportunity to enhance Iowa's overall economic vitality. ***Collectively,*** IBC companies and institutions employ nearly a quarter million Iowans and have committed billions of dollars of capital investment in the state. Annually, they account for several hundred million dollars in financial contributions and volunteer hours donated to numerous charitable causes, and lead in technology innovation by investing their own resources and procuring millions in grants for research and development. More information is available on the Web by visiting **www.iowabusinesscouncil.org**.

January 8 2010

The Honorable Chet Culver
Office of the Governor
State Capitol
1007 East Grand Avenue
Des Moines, IA 50319

Dear Governor Culver

I would like to introduce myself to you. My name is Claire Leonard and I am the President of the Iowa PTA and also a mother to a college student here in Iowa. I have been involved with the PTA since my daughter started school here in Cedar Rapids 14 years ago. With my involvement in the schools all these years I have seen many things change in the school system and am concerned about some of those changes, mostly where it appears to me that the students needs are not being met. It is sad to me that so many students don't seem to get the opportunity to learn some of the unique and often the more appreciated lessons that come from the fine arts departments due to budget cuts, as well as the larger class sizes due to staff cuts.

The National PTA has worked for years to encourage the commitment of parents to help their children to become better citizens in the community, which starts with their school community. To be able to accomplish this, these students need to learn about the importance of education. The NPTA has developed national standards to teach parents, students and staff how to work together to reach this goal. So when I was asked to join the Race to the Top advisory group it became clear to me that these two groups are connected with our desire to bring a better Iowa and making sure that the children are our first priority.

My hope is that Iowa will be able to take advantage of RTTT funds to accomplish the four major projects that will continue to make Iowa a place that other states will envy. Being able to achieve goals that are listed in the application criteria including the competency-based instruction, balanced assessment systems, teacher and administrator evaluation and support, and supporting our persistently lowest achieving schools will go along way in making Iowa that State.

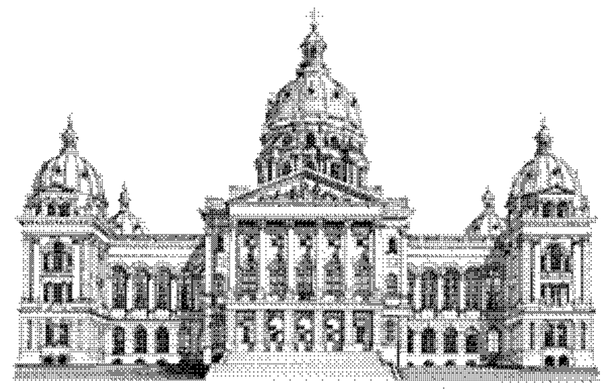
The mission and purpose of the NPTA reads "The National PTA was created to meet a profound challenge: *to better the lives of children*. It continues to flourish because PTA has never lost sight of the goal to change the lives of children across our nation for the better. The beliefs on which PTA operates are stated in its Mission." With this in mind it is apparent that anyone that works for the children of Iowa wants to encourage you to help *"Better the lives of children."*

Sincerely,
Claire Leonard
IPTA President

MIKE GRONSTAL
STATE SENATOR
Fiftieth District
Pottawattamie County
Office: (515) 281-4610
Fax: (515) 281-3361

—

HOME ADDRESS
220 Bennett Avenue
Council Bluffs, Iowa 51503
Home: (712) 328-2808
michael.gronstal@legis.state.ia.us



The Senate

State of Iowa
Eighty-third General Assembly
STATEHOUSE
Des Moines, Iowa 50319

SENATE
MAJORITY LEADER

Rules and Administration,
Chair

January 12, 2010

The Honorable Chet Culver
Office of the Governor
State Capitol
1007 East Grand Avenue
Des Moines, IA 50319

Dear Governor Culver,

As the Iowa Senate Majority leader, I believe that education is the top priority and the top responsibility of state government. I am proud of the efforts we have made in supporting an enhanced education data system and warehouse, the development of the Iowa Core Curriculum, and our nationally recognized Teacher and Administrator Quality legislation.

The Iowa Senate is committed to education reform. We have a strong education system and continually work to improve our student achievement. That is why we are supportive of the Iowa Department of Education and your effort in obtaining a Race to the Top grant to help Iowa implement our 21st Century Iowa Core Curriculum. We have shown our commitment to this reform endeavor by passing SF 2033, a bill that modifies our Code to more fully support the Race to the Top goals and mission for our students.

Iowa's education system has a long history of working together for our students. In SF 2033, we encourage schools to do things differently – to be innovative in order to increase our student achievement, close the achievement gaps in our schools and raise our graduation rates. We have new laws that allow Innovation Zone Schools and Consortiums. These new innovation zones will lift some regulations and requirements from schools in order for them to do things differently, to think outside the box and pilot new ideas for what education should look like in the 21st century.

Iowa is in a unique position to use our strong educational system to pilot and test new models of innovative education reform that will be beneficial for the rest of the nation. I am excited about this great opportunity for Iowa students and for the significant impact our work could have on what schools and education should look like for all children.

Sincerely,

Michael Gronstal
Iowa Senate Majority Leader

ISEA Great Education. It's An Iowa Basic.

Iowa State
Education Association

777 Third Street
Des Moines, IA
50309-1301
tel 515.471.8000
fax 515.471.8017
www.isea.org

An affiliate of the
National Education
Association

January 14, 2010

The Honorable Chet Culver
Office of the Governor
State Capitol
1007 East Grand Avenue
Des Moines, IA 50319

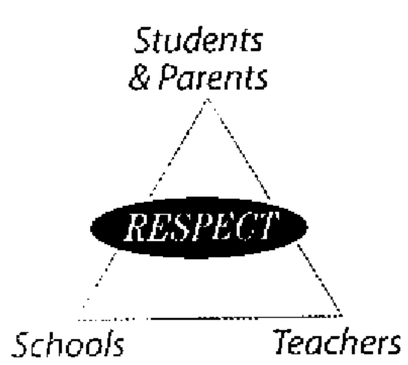
Dear Governor Culver:

On behalf of the 34,000 teachers, education support professionals, area education agency staff, community college faculty and staff, retired educators, and college students that comprise the Iowa State Education Association (ISEA); we support Iowa's application to the United States Department of Education for Race to the Top funding.

The members of the ISEA are committed and talented professionals that want nothing more than to see every student succeed in education and in life. They are passionate about the work to which they are dedicating their lives and they believe a quality public education is the key to their students' future.

As an organization that values collective action, we have been pleased to be a part of the Advisory Group and the work groups that helped draft the state's application. We have been impressed with the collaborative approach adopted by the Iowa Department of Education in developing this important application and policy framework. We stand prepared to continue supporting this work when the application turns to implementation. We regret that the tight timelines of the application process did not allow for more of our members to be involved in the process, but are confident if the application is funded our members will be integrally involved in its implementation at the local and state levels.

Far too often in education, we begin initiatives and do not see them through before a new initiative is added. We appreciate the fact the Iowa application allows us to focus on the careful and deliberate implementation of a major initiative already underway in Iowa, the Iowa Core. This endeavor is designed to sustain teachers' efforts to take learning to a deeper level in a student-based approach that focuses on essential concepts and skills in literacy, math, science, social studies, and 21st century learning skills.



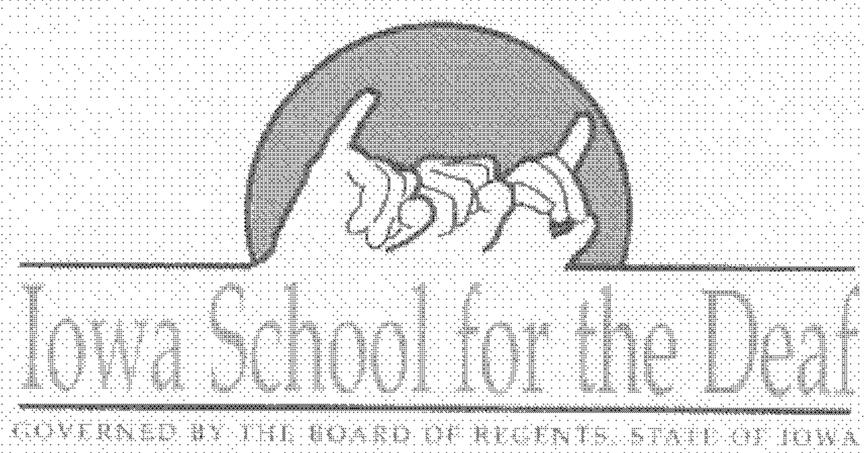
As educators, we know an over-reliance on high-stakes, standardized tests is not an appropriate method to measure student learning and are pleased that Iowa's application for Race to the Top funding recognizes this as well. The emphasis of the application on working with local educators to develop multiple high-quality measures of student growth will deepen our members' abilities to make effective instructional decisions.

Our Association will support our members who have agreed to take part in the Race to the Top effort. The application calls on our members at the local level to help develop and implement actions that will lead to enhanced student learning. We are confident the collaborative tone established through the drafting process and called for in the application will lead to the best possible outcomes for our students. Our Teacher Quality Committee process taught us all a great deal about the importance of working together in the school community. Hopefully the lessons we have learned in that process will be applied to the implementation of the Race to the Top effort, allowing teachers a strong voice in the implementation of the grant.

Sincerely,

Chris Bern
ISEA President

Celebrating 150 Years of Preparing Students for the World



1855 -2005

JEANNE GLIDDEN PRICKETT, EdD
SUPERINTENDENT

OFFICE OF THE SUPERINTENDENT

January 8, 2010

The Honorable Chet Culver
Office of the Governor
State Capitol
1007 East Grand Avenue
Des Moines, IA 50319

Dear Governor Culver:

The Iowa School for the Deaf (ISD) is Iowa's sole special school that provides a comprehensive educational program for preschool, elementary and secondary school-aged Iowans who are deaf or hard of hearing. ISD's graduates become productive adults who are full participants in their communities and state. Their success is due to the first-rate educational program they receive with your strong support and that of the Iowa Legislature.

Iowa has a long tradition of extraordinary commitment to high quality education, including for students who are deaf or hard of hearing. ISD's top priority is ensuring continuous program development and enhanced student achievement so that our students remain competitive with 21st century skills and knowledge and continue to have high quality educational opportunities.

It is imperative that Iowa's educators define the competencies required for students to remain competitive. We must also identify the optimal instructional delivery strategies and techniques to ensure that Iowa's students who are deaf or hard of hearing meet the demands.

ISD is committed to the challenge of working collaboratively with the Iowa Department of Education to make this happen for Iowa's students who are deaf or hard of hearing. We will be pleased to serve as a resource for all deaf or hard-of-hearing students and their teachers statewide, whether attending school at ISD or in their local districts, and provide curriculum and instruction leadership specifically related to optimal learning strategies for students who are deaf or hard of hearing.

The Race to the Top funding will provide Iowa's educators an extraordinary opportunity to continue to enhance student achievement by working collaboratively to define the competencies and identify optimal educational strategies for the 21st century skills our students need. We at the Iowa School for the Deaf will be very pleased to be a part of this effort! We welcome the opportunity to participate!

Sincerely,

Jeanne Glidden Prickett

Jeanne Glidden Prickett, EdD
Superintendent

3501 Harry Langdon Blvd. • Council Bluffs, Iowa 51503-7898 • 712-366-0571

Iowa School for the Deaf is an equal opportunity employer

Iowa's Special Education Advisory Panel

"Working to Improve Special Education Services for Iowa's Children"

January 6, 2010

The Honorable Chet Culver
Office of the Governor
State Capitol
1007 East Grand Avenue
Des Moines, IA 50319

Dear Governor Culver,

I am writing on behalf of the Iowa Special Education Advisory Panel to voice support for Iowa's Race to the Top proposal.

The Special Education Advisory Panel is comprised of parents, teachers, educational administrators, and state agency officials. This panel serves as a resource to advise the Iowa Department of Education on behalf of all children with special needs and their families. The purpose of the panel is to provide policy guidance with respect to special education and related services for children with disabilities.

Iowa's Race to the Top proposal offers several goals and plans that hold significant promise for students with special needs. Specifically, Iowa's students with special needs will benefit from the competency-based system that is tied to Iowa's Core Curriculum in the proposal. That system is designed around increasing the achievement of all students, with a focus on closing the achievement gap between students with disabilities and those without disabilities. Such a focus is vital to ensuring success for the students that our panel members represent. The panel is also excited by Iowa's goal to implement innovative approaches to learning opportunities through new arrangements for teaching—such as collaborative teaching—and more community engagement in learning. Another key benefit of the proposal is its alignment to Iowa's State Performance Plan, a federal requirement in which each state sets goals and targets for students needing special education. Iowa's State Performance Plan and the Race to the Top proposal both call for the use of data on student achievement and growth to inform and improve instruction. . The panel recognizes the tremendous potential for success when the Race to the Top and the State Performance Plan efforts are aligned.

Although each member of the Special Education Advisory Panel has a unique perspective, the panel shares a passion and commitment to ensuring that the needs of persons with disabilities are met. This group is optimistic about the current direction of Iowa special education and the promise inherent in Iowa's Race to the Top proposal.

We look forward to working collaboratively with partners throughout the state to implement the goals and plans identified in the Race to the Top proposal.

Sincerely,

Vicki Goshon
Chair, Iowa Special Education Advisory Panel

Chester J. Culver, Governor

Patty Judge, Lt. Governor

Elisabeth Buck, Director

IOWA WORKFORCE DEVELOPMENT

Smart. Results.

January 11, 2010

The Honorable Chet Culver
Office of the Governor
State Capitol
1007 East Grand Avenue
Des Moines, IA 50319

Re: Race to the Top

Dear Governor Culver,

Iowa Workforce Development has a long established interest in the education of Iowans. We have developed a strong and lasting relationship with the Department of Education and will collaborate with them to provide the necessary foundation to continue our students' quest for higher education and to become members of a skilled Iowa workforce.

I am pleased to provide this letter of support for the "Race to the Top" Application as part of the competitive grant program of the 2009 American Recovery and Reinvestment Act. Under this grant, Iowa has the opportunity to receive up to $200 million. Over the next four years, funds from "Race to the Top" will provide resources for Iowa to: create competency-based instruction for schools; establish a system of multiple measures for student's performance; create an architecture for capturing and reporting aggregated data; provide a more individualized approach to student performance and professional development for educators; and assist persistently lowest-achieving schools with the necessary services that will raise achievement and close learning gaps.

Iowa has already created the Iowa Core which helps teachers focus on research-based essential concepts and skills in literacy, math, science, social studies, and the 21st century learning skills in the areas of civic, financial, technology, heath and employability skills. The Iowa Core has established the basis and the funds from "Race to the Top" can bring Iowa's education system into the next century.

The result at the end of the four years will be a strong, innovative, and improved education system that produces Iowa leaders who are prepared to face the challenges of the global economy.

Sincerely,

Elisabeth Buck

Elisabeth Buck
Director

1000 E Grand Avenue • Des Moines, IA 50319 • 515-281-5387 • 800-562-4692 • www.iowaworkforce.org
Equal Opportunity Employer/Program
Auxiliary aids and services upon request to individuals with disabilities.

School Administrators of Iowa

12199 Stratford Drive, Clive, Iowa 50325 • phone 515.267.1115 • fax 515.267.1066 • www.sai-iowa.org

January 6, 2010

The Honorable Chet Culver
Office of the Governor
State Capitol
1007 East Grand Avenue
Des Moines, IA 50319

Dear Governor Culver,

I am the executive director of the School Administrators of Iowa (SAI). SAI represents all of Iowa's school administrators including elementary principals, secondary school principals, and superintendents.

The School Administrators of Iowa is committed to helping Iowa schools achieve excellence. Out motto is "linking leadership and learning." The work SAI is doing to accomplish this motto has been nationally recognized by several agencies.

The work of our organization will be enhanced by the goals and plans that are a part of Iowa's Race to the Top application. SAI is especially excited about moving toward a competency-based system, enhancing the work of professional learning communities, and fostering community engagement in learning. We believe in balanced assessment systems and the importance of professional development and support. SAI has also been very involved in teacher and administrator evaluation and support.

Race to the Top is an opportunity for Iowans to come together to build upon our historic accomplishments in education. The additional funding will be a critical component to energize the vision included in this plan.

Sincerely,

Daniel H. Smith
Executive Director
School Administrators of Iowa

School Administrators of Iowa

12199 Stratford Drive, Clive, Iowa 50325 ● phone 515.267.1115 ● fax 515.267.1066 ● www.sai-iowa.org

January 7, 2010

The Honorable Chet Culver
Office of the Governor
State Capitol
1007 East Grand Avenue
Des Moines, IA 50319

Dear Governor Culver,

I direct the Wallace Foundation's $1.5 million school leadership grant awarded to the state of Iowa. We were recently cited by an independent RAND study as being one of only three states to have the most cohesive school leadership system in the entire Wallace network of funded states. I have also been an advisor to Iowa's Race to the Top application writers by serving on two work groups: State Success Factors and Quality Teachers/Quality Leaders.

In my capacity as the director of the Wallace Leadership grant, I have had the privilege to oversee the establishment of leadership standards for school administrators; model evaluation processes and tools for evaluating principals, superintendents, and central office personnel; a host of professional development opportunities to support leaders' skills in improving student achievement; supportive conditions such as policy development, resource allocation, and central office redesign to support principals in their work to increase student achievement; the revision of administrator preparation programs; and other related initiatives. This focus on school leadership is vital, given the research that indicates that, second only to the quality of the teacher in the classroom, the quality of leaders in the building and the district impacts student achievement the most. We must have high quality leaders to create systems in which teachers and students can flourish.

It is for these reasons that I am enthusiastic about Iowa's Race To The Top application. Its emphasis on systemic improvements that will enable Iowa to implement our bold Iowa Core Curriculum proposals holds much promise for improving educational outcomes for each and every learner in our state, and for showing other rural states how this can be accomplished in spite of challenges of declining enrollment, geographic distances, and changing demographics. The acknowledgment in the proposal about the important role that school leaders play in accomplishing this vision is robust and holds administrators to high standards. This is an essential component of true reform.

Sincerely,

(b)(6)

Troyce Fisher, Ed. D.
Director, Wallace Leadership Grant for Iowa

January 12, 2010

The Honorable Chet Culver
Office of the Governor
State Capitol
1007 East Grand Avenue
Des Moines, IA 50319

Dear Governor Culver:

The Greater Des Moines Partnership (Partnership) is writing in support of the efforts of your office and the Iowa Department of Education to secure funding from the *Race to the Top* initiative now under consideration.

The Partnership strongly believes that a quality education system with workforce connections is a critical component of effective economic development. Tomorrow's workforce requires high-level reading, structured problem solving and effective oral and written communications skills, along with the ability to work in diverse groups. The readiness of Iowa's workforce will determine Iowa's economic security, prosperity, and quality of life.

The Partnership supports changes in the delivery of Iowa's pre K-12 education system that will:

- Establish state-level 21st Century learning standards and assessments focused on student achievement
- Implement the Iowa Core Curriculum with deliberate speed and align it with comprehensive student assessments that accurately measure critical learning skills at a comparative level globally, including the immediate implementation of a writing assessment.
- Align the Iowa Core Curriculum with career pathway maps to build a stronger connection between the K-12 education system and the Iowa business community.
- Improve and enhance existing technology tools to better connect the workforce needs of businesses to school curriculums and students assessing future career pathways.
- Fully implement a career ladder to provide teachers enhanced merit-based compensation and more professional development opportunities for career advancement to enhance recruitment and retention of quality teachers.
- Increase the utilization of flexible and innovative school reform models such as charter schools.
- Increase focus on science, technology, engineering, and mathematics (STEM) learning.
- Implement initiatives to improve graduation rates.

The Partnership Building • 700 Locust St. • Suite 100
Des Moines, IA 50309 • tel 515-286-4950 • fax 515-286-4974
www.desmoinesmetro.com

- Evaluate reform efforts to further implement year-round school and lengthen the school day and school calendar year, which could arguably improve student achievement, reduce juvenile crime, improve current workforce productivity, and better prepare Iowa's future workforce.

Iowa has a proud history of global leadership in educational achievement. The Partnership believes that implementing the *Race to the Top* opportunity will assure that we continue this leadership in education. In turn, it assures that Iowa and its citizens will enjoy prosperity and growth in the decades to come. We believe that educational, business, and public leaders will work together to maximize the benefits of the *Race to the Top* opportunity.

Sincerely

(b)(6)

Martha A. Willits
President & CEO

OFFICE OF THE PRESIDENT
101 Jessup Hall
Iowa City, Iowa 52242-1316
319-335-3549
Fax 319-335-0807

January 12, 2010

The Honorable Chet Culver
Office of the Governor
State Capitol
1007 East Grand Avenue
Des Moines, IA 50319

Dear Governor Culver:

The University of Iowa offers its strongest support for the Iowa Department of Education's application for a Race to the Top grant. Education is the UI's top priority, including the highest quality training of tomorrow's finest teachers for the students of our state. Our College of Education was founded in 1872 as the nation's first permanent college-level department of education. Today, the College enrolls approximately 1,000 Teacher Education Program undergraduates and 900 graduate students. Eighty percent of Iowa's K-12 school districts employ UI graduates as teachers and administrators. Iowa's graduates boast a professional retention rate significantly higher than the 50% national average: 75% of our education graduates from the years 1995-1999 remain in teaching, with another 7% moving into other educational areas such as counseling or administration. The College enjoys an international reputation for innovative teaching methods, cutting-edge research, and wide-reaching service. Our College of Education boasts the #4 Rehabilitation Counseling graduate program in the country, with five additional programs in the top 25.

The UI College of Education is committed to providing the highest quality, most up-to-date training for our state's teachers and other educational professionals. Excellent teachers are key to student success, and we are committed to making sure that the state maintains and enhances its national top-tier leadership in education. The following are some of our most significant areas of excellence:

- The College of Education is a national leader in technology. Its history of embracing technology to empower learning stems from such practical inventions as the first automated scoring machine to the recent advancements infusing multimedia into the teacher-training program with the Iowa ePortfolio project, which provides new graduates with a set of integrated digital tools.

- The College is home to the Iowa Testing Programs, an international leader in the field of educational testing and measurement. The Iowa Tests of Basic Skills and the Iowa Tests of Educational Development, both developed by Iowa Testing Programs, are widely used throughout the United States and Canada. Iowa City has become the site of a thriving testing industry thanks to the contributions, research, and expertise of Iowa Testing Programs personnel and the College. This includes the headquarters of ACT, which spun out of UI research.
- The College is a national and international leader in gifted education. The Connie Belin & Jacqueline N. Blank International Center for Gifted Education and Talent Development, founded in 1988, is dedicated to research and service in gifted education. This Center trains teachers to work with gifted students in their classrooms or to become Advanced Placement teachers. Weekend and summer workshops provide an enriched curriculum for the state's gifted students. The Center also conducts research and programs in gifted education in rural schools.
- The College's mathematics and science programs have received national recognition for classroom material development and innovative instructional delivery methods.
- In the College's most recent review by the Iowa Department of Education, special recognition was given to its technical accomplishments and the technical resources and services available to faculty, staff, and students. The College has paid special attention to and received recognition in the area of assistive technologies for learners with disabilities.
- The College is a resource for teachers, administrators, and communities throughout the state and has formed a number of partnerships with Iowa community school districts to create and investigate new methods of learning and teaching. For example, faculty in the Language, Literacy, and Culture Program work collaboratively with K-12 teachers. Through the Reading Recovery Center of Iowa, educators are trained to teach disadvantaged readers. Faculty assist school districts with curriculum development, provide consultation and counseling services, and administer workshops for professional development and continuing education.

As is evident from the above strengths, the UI is ready and eager to provide leadership, training, and support for crucial areas of Iowa's RTTT plan. As an internationally renowned center for assessment and measurement, the UI can and will play a major role in such major areas as using information on student achievement and growth to inform and improve instruction, as well as major state projects as competency-based instruction, balanced assessment systems, and teacher and administrator evaluation. Through our partnerships in multiple areas, we will continue to take a direct role in improving Iowa students' achievement, including in lowest-achieving schools. Thanks to our cutting-edge research and instructional innovations, our faculty, through their instruction of the next generation of teachers, can play a major role in the continuous process of creating new learning opportunities and environments that will best aid Iowa's students in acquiring the concepts and skills that are central to the Iowa Core.

Education in Iowa has long been one of our state's critical strengths and points of pride. The future of education in Iowa remains bright as we strengthen and deepen our commitment to our students, develop new visions and innovations for their learning, and enhance the collaborative spirit that has always marked our work. The Race to the Top grant will be invaluable to implementing Iowa's educational priorities and plans and ensuring Iowa's high student achievement in the coming years.

Sincerely,

Sally Mason
President

THE UNIVERSITY OF IOWA

COLLEGE OF EDUCATION
R•E•A•C•H
Realizing Educational and Career Hopes
A Program for Youth with a Future

N297 Lindquist Center
Iowa City, Iowa 52242-1529
319-384-2127 *Fax* 319-384-2167
reach@uiowa.edu
www.education.uiowa.edu/reach

January 8, 2009

The Honorable Chet Culver
Office of the Governor
State Capitol
1007 East Grand Avenue
Des Moines, IA 50319

Dear Governor Culver,

Realizing Educational and Career Hopes (REACH) is an innovative, two year non-degree program for students with multiple learning and cognitive disabilities at The University of Iowa. We are in our second year of operation and are serving 34 students who live in the residence hall, take specially designed courses, and participate in internships in community businesses. Already REACH has seen many remarkable outcomes in the skills and self-sufficiency of its students. Most REACH students are from Iowa and their families never envisioned that an opportunity for post-secondary education and an integrated "college" experience would be possible for their sons and daughters. These deserving young men and women, because of the unique opportunities for living and learning they are receiving at REACH, will return to their home communities better prepared to work successfully and participate actively in an inclusive community life than would have been possible without this educational opportunity.

REACH is part of the Department of Teaching and Learning in the College of Education. As such many individuals preparing to be teachers and professionals in such fields as vocational rehabilitation, counseling, and school psychology have an opportunity to be better prepared to serve Iowa children and families in need. Faculty and students in these and other programs participate actively in REACH in many different ways – for the benefit of the REACH students as well as for the benefit of the men and women preparing to improve the life outcomes of Iowa's students and families.

Working together the educational achievement and life outcomes of all of Iowa's children will be enhanced, and we at REACH are dedicated to collaborating in any way that we can to implement the Race to the Top proposal which targets schools in greatest need.

Iowa and The University of Iowa are well recognized for excellence in education. Implementation of the Race to the Top holds great promise for sustaining and improving student, school, and community achievement. Thank you for your support of this important initiative!

Sincerely,

Jo Hendrickson

Jo Hendrickson, Director
REACH

January 11, 2010

The Honorable Chet Culver
Office of the Governor
State Capitol
1007 East Grand Avenue
Des Moines, IA 50319

Dear Governor Culver:

The University of Northern Iowa (UNI) is pleased to write a letter of support for Iowa's Race to the Top proposal. UNI has a long history of working collaboratively with the Iowa Department of Education, Area Education Agencies, and local education agencies to provide effective educational practice in Iowa's schools. As the largest teacher preparation institution in Iowa, UNI graduates approximately 550 educators annually. UNI's alums provide significant leadership in Iowa schools as reflected by data from the 2008 – 2009 academic year where 23 percent of Iowa's teachers and 29 percent of Iowa administrators had earned at least one degree from UNI. In addition, UNI's Price Laboratory School (PLS), with the proposed Research and Development School at UNI, has established a unique partnership with the Iowa Department of Education (IDE) to provide leadership and model innovative practices that are shared with Iowa's educators. The collaborations between the Iowa Department of Education and UNI will provide a significant resource in implementing the Iowa Core and supporting each student in acquiring the essential concepts and skills for future success.

The University of Northern Iowa is committed to working as an active partner with the Iowa Department of Education and other educational entities to support the Iowa Core vision that each student graduates prepared for college, a career, and citizenry. UNI faculty have been engaged in this partnership by providing leadership for the development and implementation of the Iowa Core. Each of the Iowa Core writing committees included UNI faculty and the Price Laboratory School faculty have partnered with the IDE and Area Education Agency consultants to develop and deliver professional development instruction focused on the Iowa Core.

The UNI teacher education faculty have participated in professional development preparation that has targeted the pedagogy supporting the Iowa Core. The teacher education program has embedded the Teacher Work Sample (TWS) in clinical experiences. The TWS is completed under the supervision of UNI faculty during the required field experiences at PLS and during student teaching. The TWS provides a framework for competency-based instruction and a balanced assessment for student learning and program development. These examples reflect the commitment that the

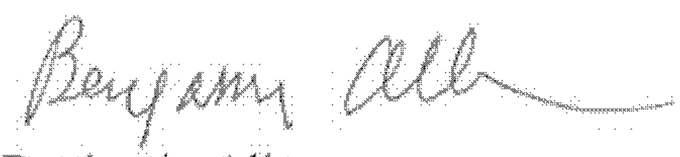
20 Seerley Hall • Cedar Falls, Iowa 50614-0705 • Phone: 319-273-2566

University of Northern Iowa has been engaged with IDE initiatives and remains dedicated to collaborating on future innovative activities.

One of the University of Northern Iowa's priorities is to prepare great teachers and leaders. UNI's rich tradition in educator preparation provides the foundation for future leadership in preparing professionals for 21st century learning environments. UNI is positioned to support Iowa's Race to the Top proposal by partnering at both the pre-service level as well as through inservice and professional development with practicing professionals.

The Iowa Core provides the overall vision and framework for a systems approach to guide the innovation and change needed for the new mission of education. This vision combined with Iowa's rich tradition of providing quality educational experiences at all levels, PreK – 20, provides the basis for Iowa's students acquiring the essential concepts and skills embodied in the Iowa Core. The University of Northern Iowa anticipates the opportunity to collaborate with the Iowa Department of Education and local education agencies in providing expertise needed to implement the goals identified in Iowa's Race to the Top proposal with the ultimate outcome that EACH student is prepared for college, a career, and citizenry.

Sincerely,



Benjamin Allen
President

Department of Special Education

University of Northern Iowa

January 8, 2010

The Honorable Chet Culver
Office of the Governor
State Capital
1007 East Grand Avenue
Des Moines, IA 50319

Dear Governor Culver:

The purpose of this letter is to offer support for Iowa's Race to the Top Application for funding. The Department of Special Education at the University of Northern Iowa has a longstanding commitment to education in Iowa. We demonstrate this commitment through the preparation of highly qualified teachers and research and service that leads to the improvement of pre K–12 education. All of the faculty members in Special Education actively participate in one or more initiatives to improve the quality of services for children with disabilities in Iowa.

The Department has been engaged in numerous activities to improve education for Iowa children over the past ten years. First and foremost is our longstanding commitment to address the chronic shortage of special education teachers in the state. We have addressed this concern or priority by not only recruiting and preparing highly qualified teachers at UNI, but working closely with the state Department of Education to provide coursework to teachers who are on conditional or temporary special education licenses. Second, our faculty have been engaged in ongoing efforts to conduct research and professional development activities for teachers. For example, the Center for Disability Studies in Literacy, Language, and Learning has recently been established to engage in research and provide resources and support to families and teachers in Iowa. Similarly, our faculty have collaborated with state personnel in examining ways to improve vocational training for adolescents with disabilities, support novice special education teachers, and support inclusion for children with special needs. Our faculty are committed to continuing and extending these activities over the next year.

Several of Iowa's priorities for the Race to the Top are especially promising to our Department. For example, one goal is to ensure that all students acquire the essential concepts and skills embodied in the Iowa Core Curriculum. This will entail developing learning environments and approaches that are not only innovative, but effective for children who present significant learning challenges. The Department of Special Education is anxious to collaborate with the state on this priority. A second goal is to improve schools that have faced persistent difficulties with student achievement. Numerous faculty in our department have both the expertise and commitment to collaborate with the state in implementing effective school intervention models. These two initiatives are especially promising because they fit our current activities as well as our vision of the role that our department should assume in supporting Iowa education.

150A Schindler Education Center • Cedar Falls, Iowa 50614-0601 • Phone: 319-273-6061 • Fax: 319-273-7852 • www.uni.edu/coe/specialed/

In closing, the State of Iowa has a reputation for providing one of the finest educational systems in the nation and I am confident that Race to the Top funding will lead to even greater accomplishments. On behalf of the Department, I wish to offer my support and commitment to continuing to support activities to lead to the improvement of education in Iowa.

Sincerely,

Dr. Frank W. Kohler
Interim Head and Professor
Department of Special Education
University of Northern Iowa

January 10, 2010

The Honorable Chet Culver
Office of the Governor
State Capitol
1007 East Grand Avenue
Des Moines, IA 50319

Dear Governor Culver,

As core faculty in the University of Northern Iowa's *Center for Disability Studies in Literacy, Language, & Learning*, we strongly support Iowa's effort to secure vital educational resources through the *Race to the Top* funding.

The Center at UNI, largely funded through external national and state grants and contracts, is a multidisciplinary effort focused on supporting literacy and communication skills for *all* children. Center personnel, in close cooperation with the Iowa Department of Education, work directly in classrooms and schools conducting research, teacher development, family advocacy, and policy initiatives that support the full participation of students who have developmental and sensory disabilities.

One of our projects with the DE entitled *Literacy, Language, & Communication for Students with Significant Developmental Disabilities: Reaching Potentials through Systemic & Sustainable Statewide Professional Development* (hereafter referred to as the Iowa Literacy Project) is a 5 year commitment to supporting the literacy and communication growth of Iowa children with the most significant developmental disabilities. Few other states across the nation are demonstrating such a direct and vital interest in a population of children often left out of valued opportunities both in and out of school.

The Iowa Literacy Project brings together teams of educators from across Iowa as cohorts. The cohort then receives intense, on-going professional development focused on language, literacy, and communication growth in children with severe disabilities. Through our direct work with educators we have witnessed teachers, therapists, classroom aides, AEA personnel, and administrators in interaction with one another and research experts challenging the conventions of low expectations and often misguided practice. We are seeing classrooms, teachers, and, most importantly, children change before our eyes! Students previously deemed to be hopelessly sub-literate (thus destined for a life of illiteracy) are now perceived as competent language learners. One teacher commented, "Last year I never did any literacy and this year it's just about everything I do!"

150A Schindler Education Center • Cedar Falls, Iowa 50614-0601 • Phone: 319-273-6061 • Fax: 319-273-7852 • www.uni.edu/coe/specialed/

The *Race to the Top* proposal will further support Iowa's quest to continuously improve its educational systems. The proposal recognizes what we're directly experiencing through the Iowa Literacy Project: Cutting-edge practices, new organizational structures, access to technology, and innovative knowledge can radically alter the terrain of a school. Children can succeed where previously expectations of success were absent.

Maddie, age 5, is one student involved in the Iowa Literacy Project. She has severe physical disabilities, does not speak, and uses a wheel chair. Previous to her educational team's involvement with our Center, Maddie was presumed to have significant intellectual disabilities and was provided few opportunities to develop in her capacity as a literate child. With new understanding and access to technology, Maddie is now able to effectively access a computer through a beam of light she controls with her head. Within just a couple months she is demonstrating skills with letter recognition, reading, and writing. With her control over a computer, in combination with high expectations and teachers who now see her as a competent learner, the world is opened to her. She had been destined to a life of round-the-clock care but now has the opportunity to become whatever she wants: an architect, a mathematician, or perhaps a teacher!

Race to the Top will support all of Iowa's children in its commitment to foster innovative approaches to education. Importantly, children with significant developmental disabilities will be included! Again, faculty at the UNI Center for Disability Studies in Literacy, Language, & Learning are committed to doing anything we can to further this effort.

Sincerely,

Amy Staples, Ph.D.
Department of Special Education
(319)273-7468
amy.staples@uni.edu

Evette Edmister, Ph.D., CCC-SLP
Communication Sciences & Disorders
(319)273-2512
evette.edmister@uni.edu

Amy Petersen, Ed.D.
Department of Special Education
(319)273-7959
Amy.petersen@uni.edu

Jennifer Walz Garrett, Ph.D., CCC-SLP
Communication Sciences & Disorders
(319)273-3703
jennifer.garrett@uni.edu

Chris Kliewer, Ph.D.
Department of Special Education
(319)273-7185
kliewer@uni.edu

URBAN EDUCATION NETWORK OF IOWA

Dr. Lew Finch, Executive Director
1543 Bilgarie Ct NE
Cedar Rapids IA 52402
lfinch@mchsi.com
319-329-0547 Cell/Office
319-362-9272 Fax

January 8, 2010

The Honorable Chet Culver
Office of the Governor
State Capitol
1007 East Grand Avenue
Des Moines, IA 50319

Dear Governor Culver,

The Urban Education Network of Iowa (UEN) is comprised of Iowa's eight largest school districts. Collectively, these eight districts enroll nearly 25% of Iowa's public school students, employ approximately 26% of Iowa's certified staff, and educate nearly 52% of Iowa's students of color. Each of these districts includes high percentages of special needs, at risk and low income families. The challenge is daunting.

The UEN continues to advocate for appropriate education of all Iowa students, and each year, has adopted legislative priorities designed to support all students. Each of the eight districts has been on the cutting edge by aggressively initiating innovative programs and services to improve the quality of education for students they serve. However, the challenges posed by under-performing "at risk" students has exceeded the available resources.

Iowa's Race To The Top application and plan includes several initiatives that are consistent with recently adopted goals of the UEN. These include: considering student performance as one factor in the evaluation of teachers; creation of innovation zones that allow school boards and administrators to more aggressively address low-performing schools; the requirement for a turn-around model for persistently low-performing schools; and, development of multiple assessments to determine student performance.

The Urban Education Network of Iowa is ready and willing to work cooperatively with the Iowa Department of Education, the Iowa General Assembly and you, Governor Culver, for the improvement of Iowa's public schools. A successful Race To The Top application would be a tremendous boost to our collective efforts.

Respectfully,

Dr. Lew Finch
Executive Director

IOWA NAEP RESULTS 1990 to 2007: THE REST OF THE STORY

Dianne Chadwick, Ed.D., Administrative Consultant

Abstract—The National Assessment of Educational Progress (NAEP) is the only nationally representative and continuing assessment of what America's students know and can do in various subject areas. While the assessment is essentially the same from year to year, subtle differences occur over time in administration and subgroup composition. These differences have affected Iowa's results.

Background—NAEP began in 1964 with a grant from the Carnegie Corporation to set up the Exploratory Committee for the Assessment of Progress in Education. The first national assessments were held in 1969. Main NAEP is the name often applied to the most frequently reported NAEP assessments. Main NAEP includes assessments in mathematics, reading, science, writing, the arts, civics, economics, geography, and U.S. history. These assessments follow the frameworks developed by the National Assessment Governing Board, and use the latest advances in assessment methodology. National assessments include all nine subjects above, assessed at grades 4, 8, and 12—although not all grades are assessed each time. Beginning in 1990 four of these subjects (mathematics, reading, science, and writing) are reported also at the state level, State NAEP, usually for grades 4 and 8. Since 2003, with the implementation of the No Child Left Behind Legislation, all states have participated in the state-level assessments at grades four and eight in reading and mathematics. Iowa participated in many of the voluntary NAEP assessments and all of the mandatory assessments (Table 1). For national assessments, students in public and private schools are assessed, but at the state level, assessment is in public schools only.

NAEP also administers the long-term trend (LTT) NAEP assessments at the national level only. These assessments are administered in a manner that is very different from that used for Main NAEP assessments. LTT reports results in mathematics and reading that present trend since the 1970s, and are given every four years. LTT results are not provided at the state level.

Table 1—Iowa Participation in State NAEP

	MATHEMATICS			READING			SCIENCE			WRITING	
	GRADE 4	GRADE 8	GRADE 12	GRADE 4	GRADE 8	GRADE 12	GRADE 4	GRADE 8	GRADE 12	GRADE 4	GRADE 8
1990[n]		■									
1992[n]	■	■		■							
1994[n]				■							
1996[n]	■	■						■			
1998				■							
2000	■						■				
2002				■						■	
2003	■	■		■	■						
2005	■	■		■	■						
2007	■	■		■	■						■
2009	■	■	■	■	■	■	■	■	■	■	

■ Iowa schools participated and received/will receive state level results.
[n] Accommodations were not permitted for this assessment.

The perception held by some stakeholders is that Iowa students scored high on NAEP in the early years, and more recently, Iowa students have not faired as well. This paper reviews changes in State NAEP for Iowa from 1990 through 2007. In addition, Iowa and national results from 1996 through 2007 are discussed. The results of the 2009 assessment will not be available until fall 2009. Due to the greater availability of demographic variables than in the early years 1996 was chosen as the comparison year. While equating has been completed to allow scores over the years to be compared, differences in the state NAEP assessment from 1996 to 2007 exist. The changes include framework, administration practices, and sample assessed, as well as calculation of the national results (Jones and Olkin, 2004). The focus of this paper is on mathematics in grade 8 and reading in grade 4; however changes in other grades and subjects are also noted.

Method—This paper includes both quantitative and qualitative results; however the focus is on a post-hoc analysis of the quantitative measures. NAEP results for mathematics and reading from 1990 through 2007 were examined using the NAEP Data Explorer. Student demographics including race ethnicity, students with disabilities (SD) status, English language learner (ELL) status, and student lunch status were the primary independent variables of interest. The dependent variable was performance on the NAEP assessment. Because the subgroups changed significantly from 1996 to 2007, growth curves were examined for any influence of reversal paradox (Simpson, 1951; Blyth, 1972). A historical review of NAEP administration and NAEP frameworks from 1996 and 2007 is included.

Results—

Mathematics Framework

Like the assessment frameworks used for the 1990–2003 assessments, the 2005 and 2007 NAEP mathematics framework revision describes five mathematics content areas:

- number properties and operations,
- measurement,
- geometry,
- data analysis and probability, and
- algebra.

The NAEP 1996 and NAEP 2007 frameworks differ slightly in the amount of emphasis given to each content strand for a given grade (Table 2). For example, in 1996 in grade eight 25 percent of the assessment was planned to assess number properties and operations and 25 percent was algebra. In the 2007 assessment, this had changed to 20 percent on number properties and operations and 30 percent algebra.

Table 2—Minimum Percentage Distribution of Items by Grade and Content Strand

	GRADE 4		GRADE 8		GRADE 12	
CONTENT STRAND	1996	2007	1996	2007	1996	2007
Number Properties and Operations	40%	40%	25%	20%	20%	10%
Measuremen	20%	20%	15%	**15%**	15%	30%
Geometry	15%	15%	20%	20%	20%	
Data Analysis and Probability	10%	10%	15%	15%	20%	25%
Algebra	15%	15%	25%	30%	25%	35%

SOURCE: U.S. Department of Education, National Assessment Governing Board, Mathematics Framework for the 2007 National Assessment of Educational Progress, 2006.

Reading Framework

The reading framework distribution did not change from the beginning of State NAEP to 2007. However, a new framework was developed for the 2009 assessment.

Table 3—Minimum Percentage Distribution of Items by Grade and Content Strand

CONTENT STRAND	GRADE 4	GRADE 8	GRADE 12
Literary Experience	55%	40%	35%
To Be Informed	45%	40%	45%
To Perform a Task	No scale	20%	20%

SOURCE: U.S. Department of Education, National Assessment Governing Board, Reading Framework for the 2007 National Assessment of Educational Progress, 2006.

Administration Practices

NAEP assessments prior to 2002 were administered by school personnel in the selected schools. The staff members chosen to administer the assessment received one day of training. For assessments in 2002 and later, the administration was completed by a subcontractor to the United States Department of Education, Westat. Many of the Westat assessment administrators are retired educators.

Inclusion of Special Education Students and English Language Learners

Prior to 1996, accommodations for special education students were not allowed on Main NAEP. During 1996 and again in 2000, NAEP was administered to a sample with accommodations and a sample without accommodations. The effects of the accommodations were examined to determine the extent of the effect on state results. Accommodations have been permitted on every administration since. This has allowed NAEP to include additional special education students (Table 4). The change in Iowa went from having very few special education students included in the NAEP 1996 administration to having special education students comprise 11 percent and 13 percent (grade 4 and grade 8 respectively) of the assessed students in 2007. In 2007, Iowa had 4 percent more special education students in the assessed group than did the Nation at the eighth grade level.

At the same time, the number of English language learner students has increased in both Iowa and the nation. In Iowa, 5 percent of the assessed students in fourth grade mathematics in 2007 were ELL. In the Nation 10 percent were ELL. Both were an increase from less than 1 percent in 1996.

Table 4—Percent of Special Education (SD) and English Language Learner (ELL) Students Administered the NAEP

	GRADE 4				GRADE 8			
MATHEMATICS	1996		2007		1996		2007	
	Iowa	Nation	Iowa	Nation	Iowa	Nation	Iowa	Nation
Special Education	‡	‡	11%	12%	‡	‡	13%	9%
English Language Learners	‡	‡	5%	10%	‡	‡	3%	6%

‡ Reporting requirements not met

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2007 Mathematics Assessment.

Other jurisdictions include more or less special education and English language learner students in their NAEP assessment than Iowa does. However, the percent of special education students included does not correlate significantly with the mean score of the state (i.e., mathematics 8, $r = 0.14$, $p = 0.328$; reading 4, $r = 0.23$, $p = 0.106$).

Changing Population

Similar to the Nation as a whole, Iowa's student population is becoming poorer and more diverse (Table 5). Iowa's percentage of minority and poor students increased during the period from 1996 to 2007, but the Nation as a whole still has a higher percentage of minority and poor students than Iowa does.

Table 5—Percent of Students Assessed by Subgroup

	Grade 4				Grade 8			
	1996		2007		1996		2007	
	Iowa	Nation	Iowa	Nation	Iowa	Nation	Iowa	Nation
White	93%	71%	86%	55%	95%	70%	88%	58%
Black	3%	17%	5%	17%	2%	16%	4%	17%
Hispanic	3%	9%	6%	21%	1%	9%	6%	19%
Asian	1%	3%	2%	5%	1%	‡	2%	5%
Low SES*	31%	34%	34%	46%	19%	30%	30%	41%

‡ Reporting requirements not met.
*Eligible for Free or Reduced Lunch.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2007 Mathematics Assessment.

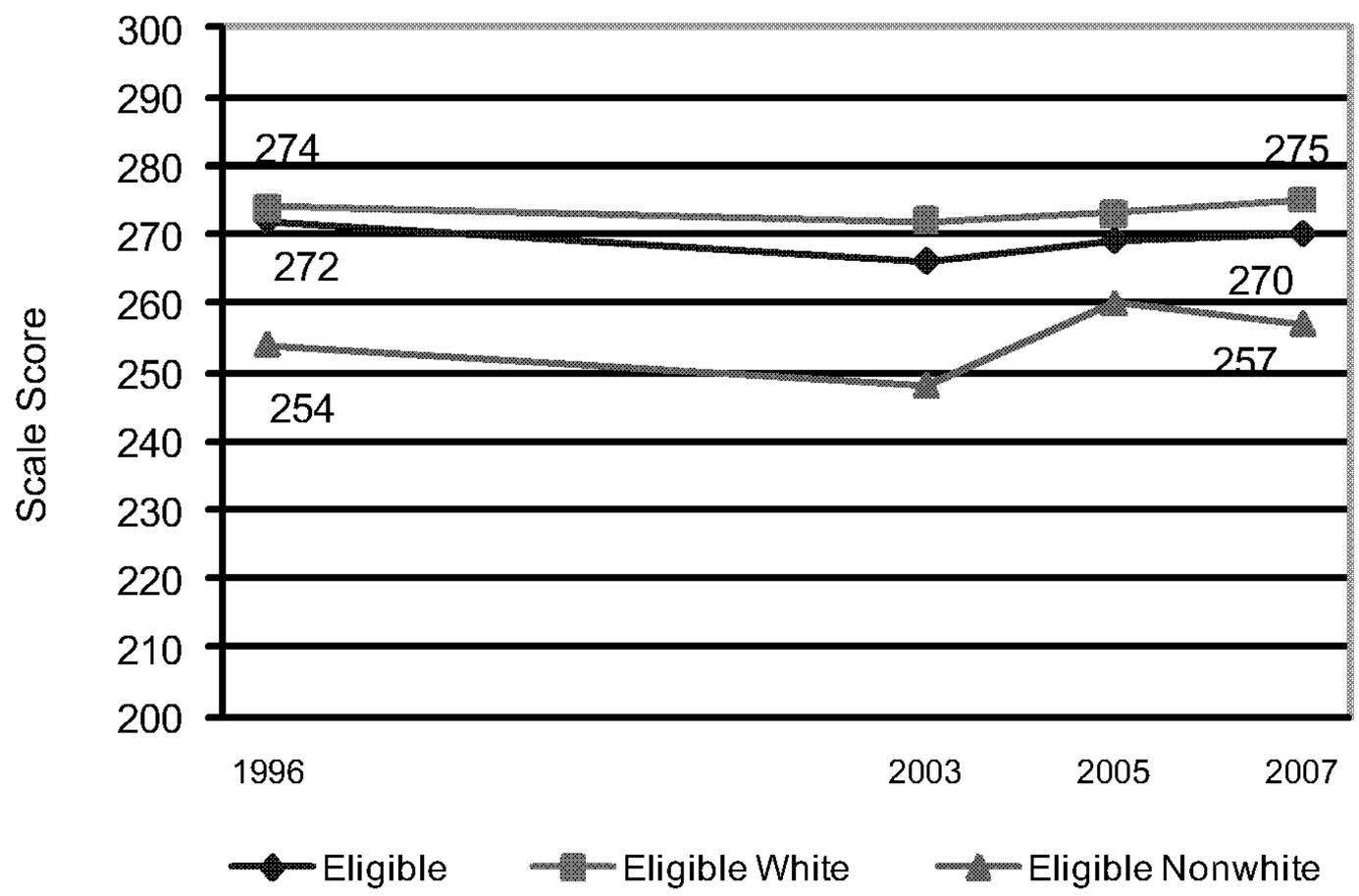
Calculation of National Results

Before NCLB was adopted, states could opt in (or out) of any state NAEP assessment. For 2003 and later years, all states participated in State NAEP in reading and mathematics in grades 4 and 8. The other State NAEP assessments, writing, and science continue to be optional. In 2003 and all years prior, the NAEP national sample was drawn using a sampling procedure separate from the state samples. For 2005 and later, the national sample is a weighted sample that includes the students in the state samples. This increased the number of students included in the calculation of the national results. Due to the large sample size, even small changes are statistically significant.

Iowa Results

Iowa State NAEP scores have generally increased since 1996. During the same period, most other states have also increased, some at a greater rate than Iowa. Many of the results are confounded by changes in the composition of the subgroups. For example, in the grade 8 mathematics assessment, the percent of students eligible for free or reduced price lunch changed from 19 percent (1996) to 30 percent (2007). The subgroup of not eligible students improved significantly, but the subgroup of eligible students did not (Figure 1). For the group as a whole, there was no significant change. Further examination of the data shows that both the eligible white students and the eligible nonwhite students improved, but the eligible students did not. None of these changes were significantly different when 1996 scores are compared to 2007 scores. This discrepancy is the result of Simpson's paradox (also called reversal paradox and amalgamation paradox), a statistical paradox wherein the successes of groups seem reversed when the groups are combined (Simpson, 1951; Blyth, 1972). This result is often encountered in social and medical science statistics, and occurs when frequency data are hastily given causal interpretation. This is not uncommon when the make-up of groups is changing notably. In 1996, white students made up 90 percent of the eligible group. In 2007, white students comprised 73 percent of the eligible group.

Figure 1—Example of Simpson's Paradox: Iowa Grade 8 Mathematics NAEP Results for Eligible Students



SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2007 Mathematics Assessment.

Comparisons with the Nation

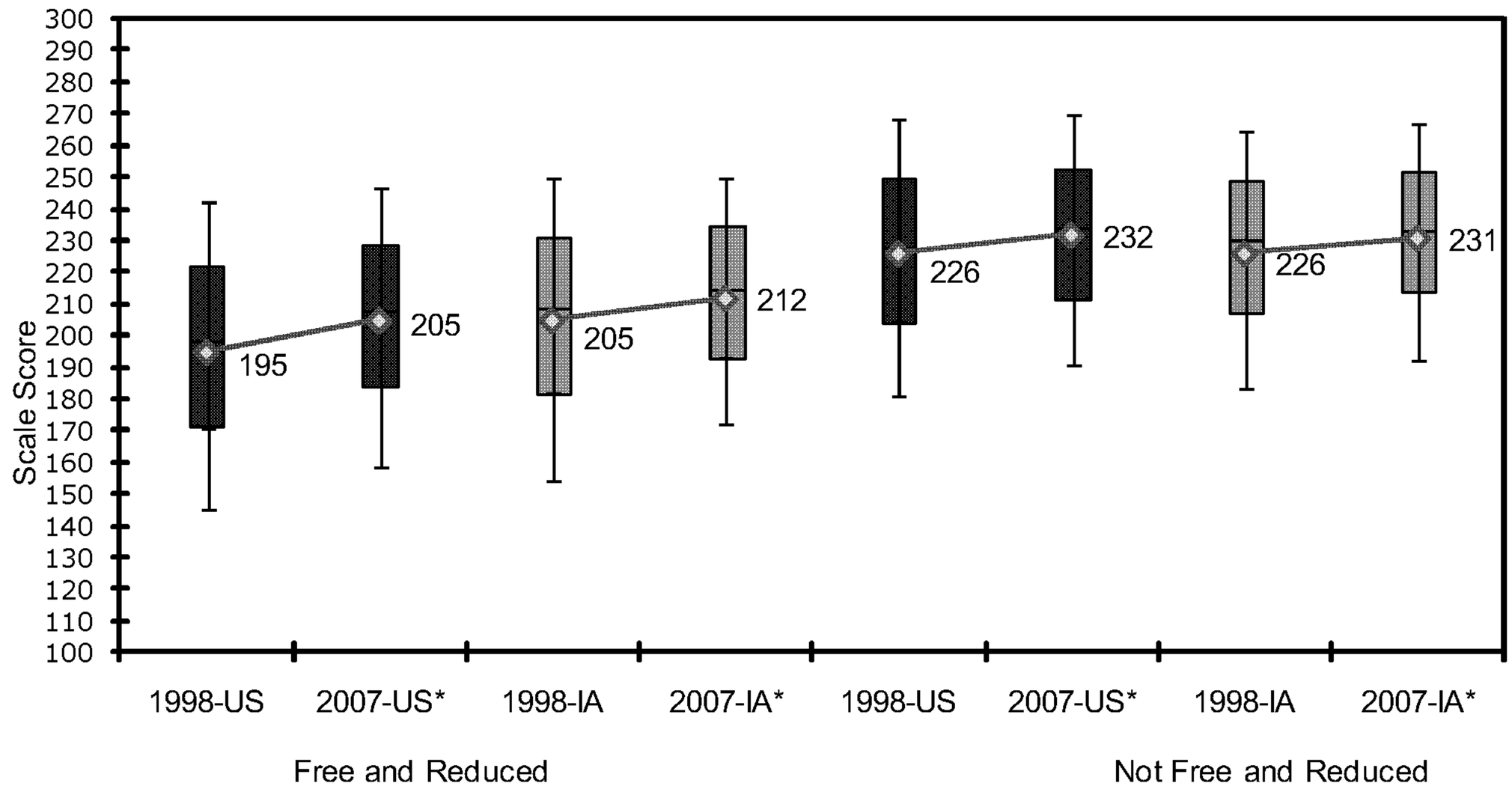
The following chart examines the relationship between Iowa's score on NAEP for all students and for selected subgroups of students as compared to the nation. Boxes marked ***higher*** show assessments where Iowa scored significantly higher than the nation. Those marked ***same*** are assessments where Iowa and the nation had no significant difference. The boxes marked ***lower*** are the assessments that Iowa had a significantly lower score than the nation as a whole.

Table 6—Comparison of Iowa and the Nation on NAEP 1996 and 2007

	MATHEMATICS 4		MATHEMATICS 8		READING 4		READING 8	
	1996	2007	1996	2007	1998	2007	1996	2007
All students	higher	higher	higher	higher	higher	higher	NA	higher
Not eligible	higher	same	higher	same	higher	same	NA	higher
Eligible	higher	higher	higher	higher	higher	higher	NA	higher
Not SD	NA	higher	NA	higher	NA	same	NA	higher
SD	NA	same	NA	same	NA	lower	NA	same
White	higher	lower	higher	lower	higher	lower	NA	same
Black	higher	higher	higher	same	higher	same	NA	same
Hispanic	NA	higher	NA	same	NA	same	NA	same
Asian/Pacific Islanders	NA	NA	NA	NA	NA	same	NA	NA
American Indian / Alaska Native	NA	NA	NA	NA	NA	NA	NA	NA

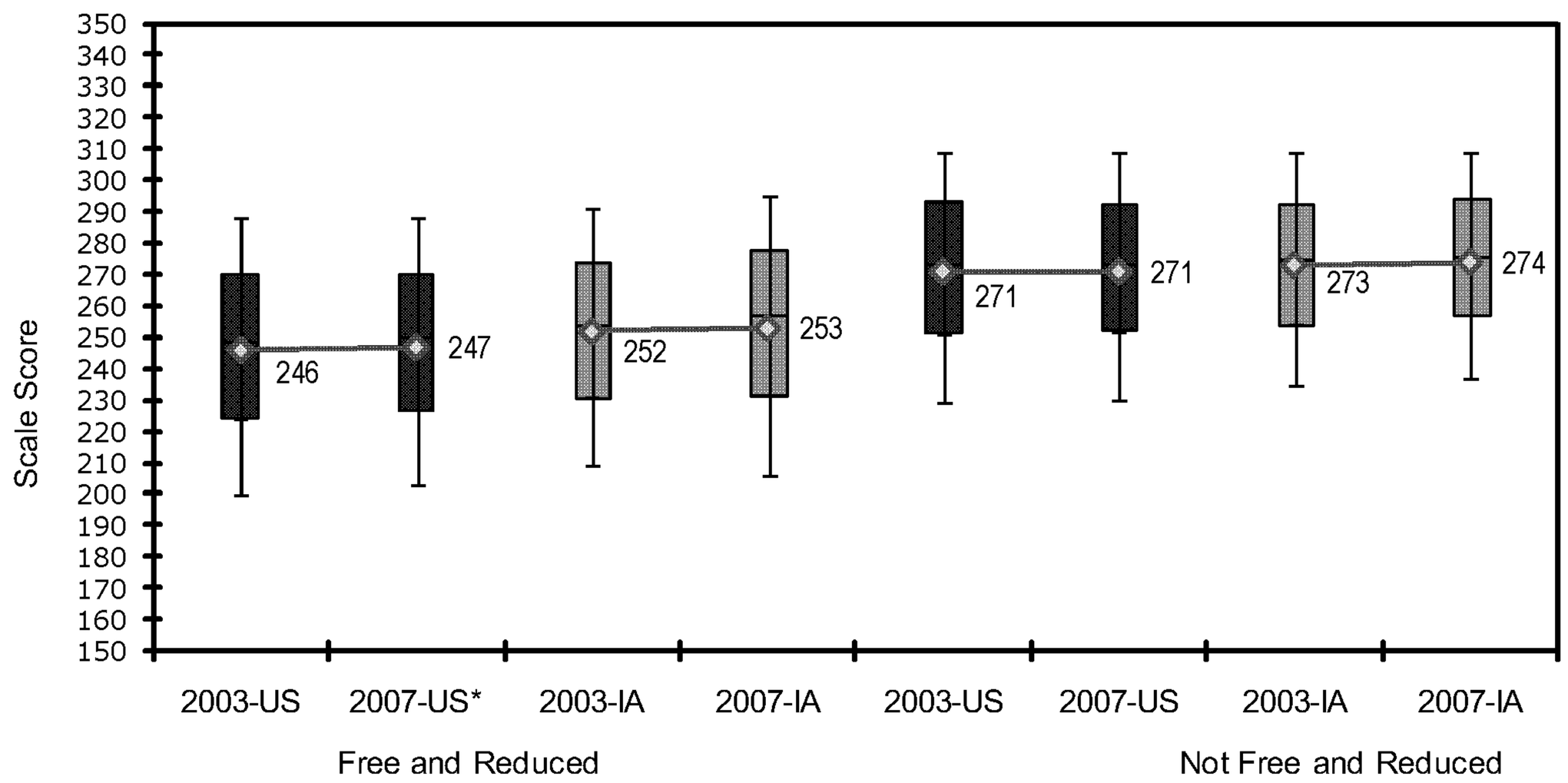
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2007 Mathematics Assessment.
U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2007 Reading Assessment.

Figure 2—Comparison of Iowa and the Nation on NAEP Grade 4 Reading 1998 and 2007



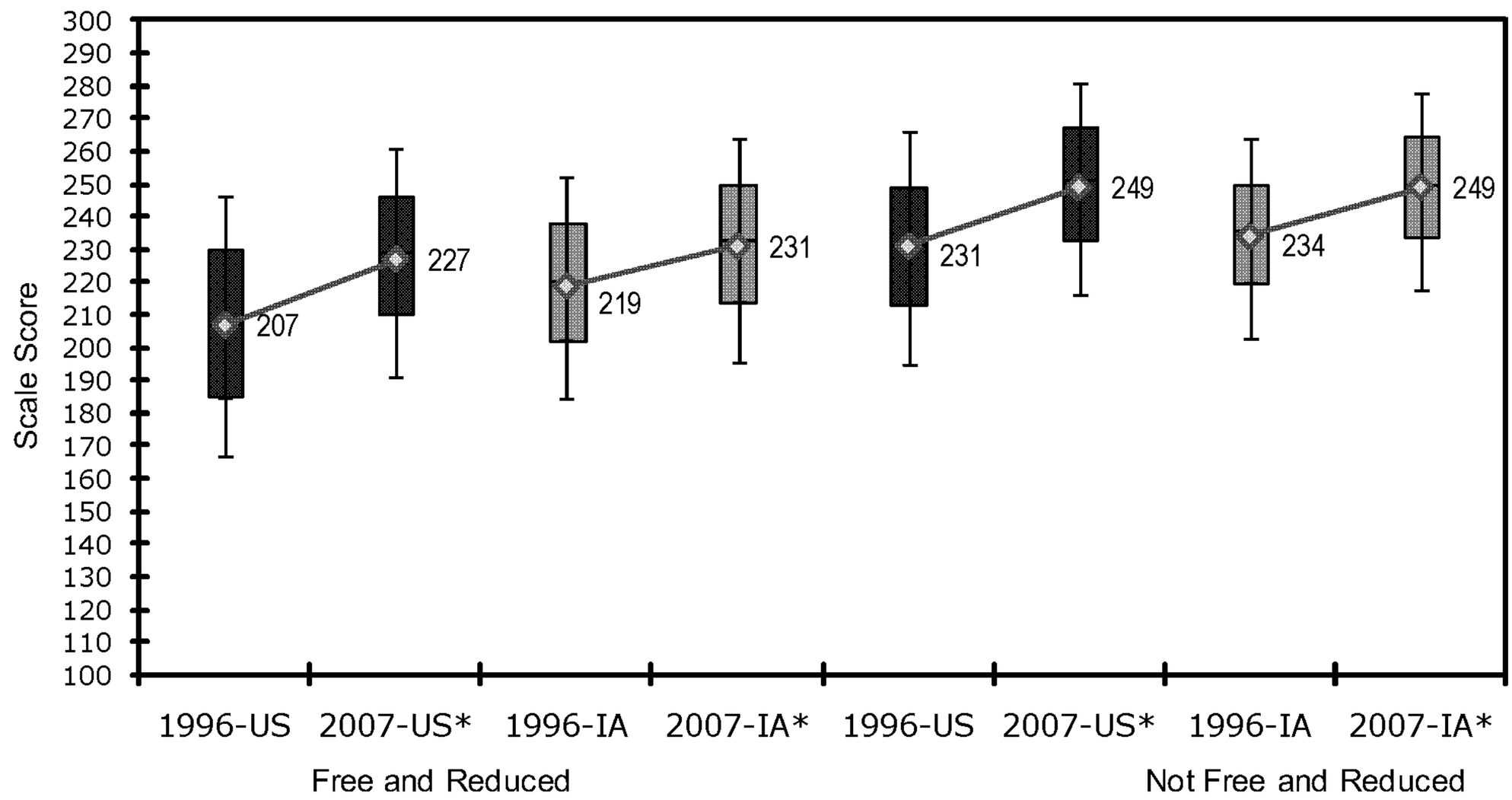
*Differences between 1998 and 2007 significant at .05.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2007 Reading Assessment.

Figure 3—Comparison of Iowa and the Nation on NAEP Grade 8 Reading 2003 and 2007



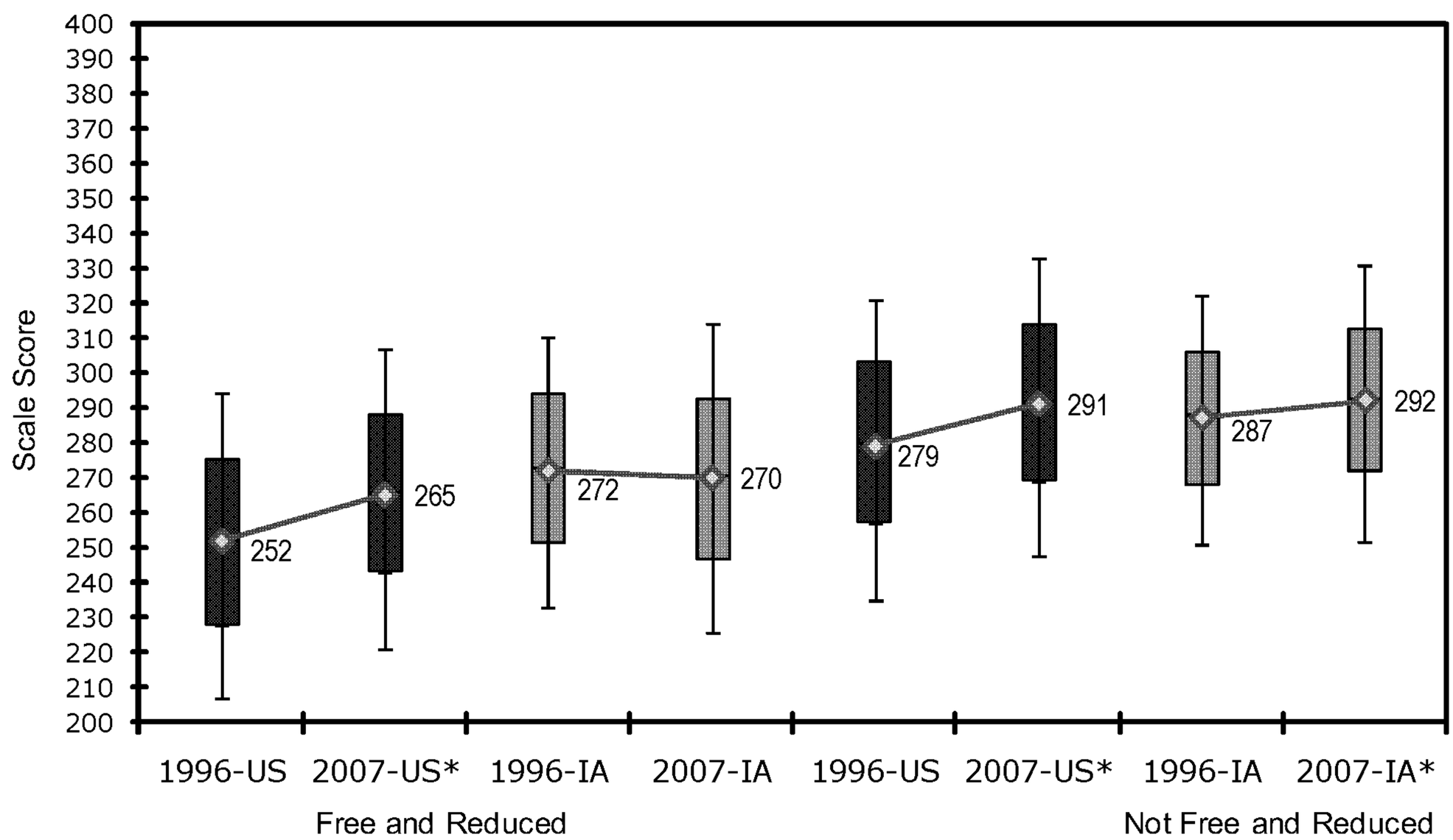
*Differences between 2003 and 2007 significant at .05.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2007 Reading Assessment.

Figure 4—Comparison of Iowa and the Nation on NAEP Grade 4 Mathematics 1996 and 2007



*Differences between 1996 and 2007 significant at .05.
Note that accommodations were allowed in 2007, but not in 1996.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2007 Mathematics Assessment.

Figure 5—Comparison of Iowa and the Nation on NAEP Grade 8 Mathematics 1996 and 2007



*Differences between 1996 and 2007 significant at .05.
Note that accommodations were allowed in 2007, but not in 1996.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2007 Mathematics Assessment.

Significance/Impact—Iowa students continue to score above the nation in reading and mathematics at grades 4 and 8. However, subgroup comparisons are not so consistent (Table 6). Comparisons of Iowa and the nation for all and for white students not eligible for free or reduced price lunch and not special education or English language learners with similar students in other states are shown in the appendix. In some subjects, Iowa students have moved from ranking statistically above the nation at the mean score to statistically the same. Note that while Iowa's overall scores significantly increased in some subjects (mathematics and reading at grade 4) and have remained steady in other subjects (mathematics and reading at grade 8), students in some other jurisdictions have significantly increased their scores.

Results of the NAEP assessment are often more complex than can be communicated using a single mean score. NAEP results are reported in the public press and quoted by legislators, but often only a portion of the results are reported leaving the reader looking for the rest of the story. Two reasons for Iowa's NAEP results became apparent in this analysis. First, the population change has had an effect on Iowa's results. Second, Iowa students have made gains, but not as rapidly as in other states. The reason for this is not clear. Many other states have aligned their standards with the NAEP assessment, but Iowa has not. Many other states include constructed response items in their state assessment, but Iowa does not.

REFERENCES

Blyth, C.R. (1972). On Simpson's Paradox and the Sure-Thing Principle. Journal of the American Statistical Association, 67 (338): 364–366.

Jones, L.V. & Olkin, I. (2004). The Nation's Report Card: Evolution and Perspectives. Bloomington, IN: Phil Delta Kappa Educational Foundation.

Simpson, E.H. (1951). The Interpretation of Interaction in Contingency Tables. Journal of the Royal Statistical Society, Ser. B 13: 238–241.

APPENDIX

Key to following significant difference maps:

COLOR	GRAYSCALE	
Blue	Black	Iowa
Green	Medium Gray	Has a higher average scale score than Iowa
Tan/Yellow	Light Gray	Is not significantly different from the focal Iowa
Orange/Red	Dark Gray	Has a lower average scale score than the focal Iowa
Gray	White	Sample size is insufficient to perform a reliable estimate

f

Figure 1A—Iowa compared to the Nation: Grade 8 Reading

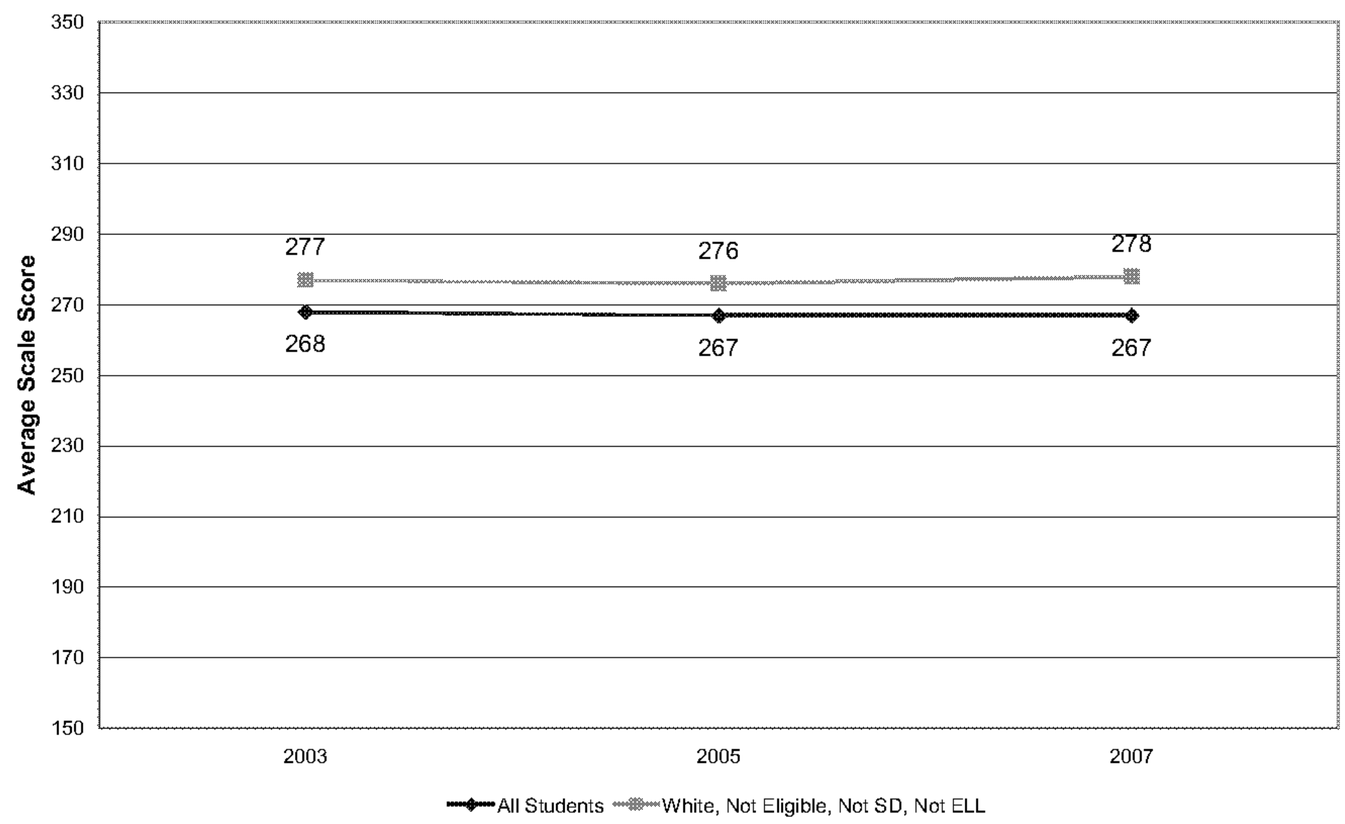
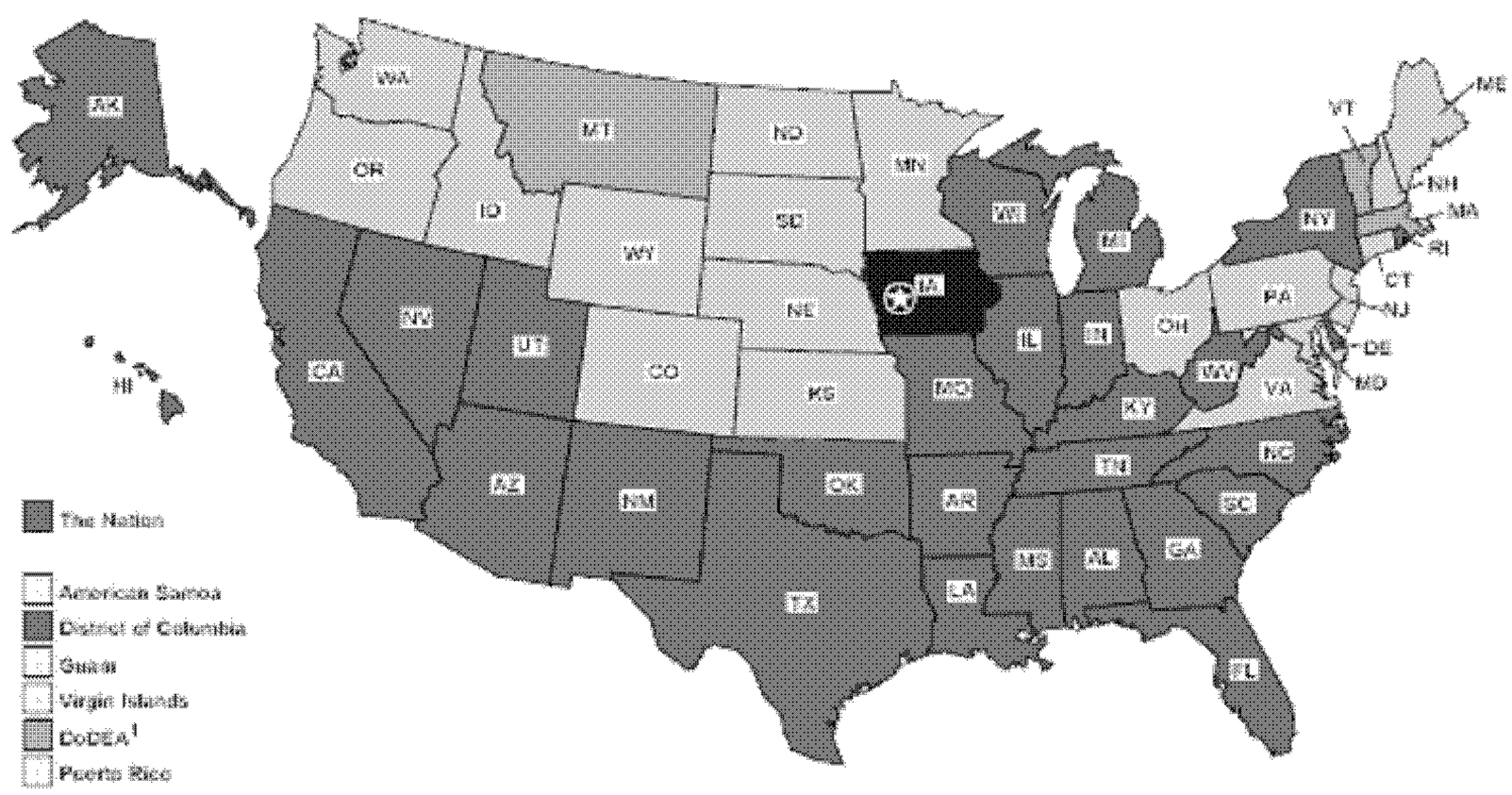


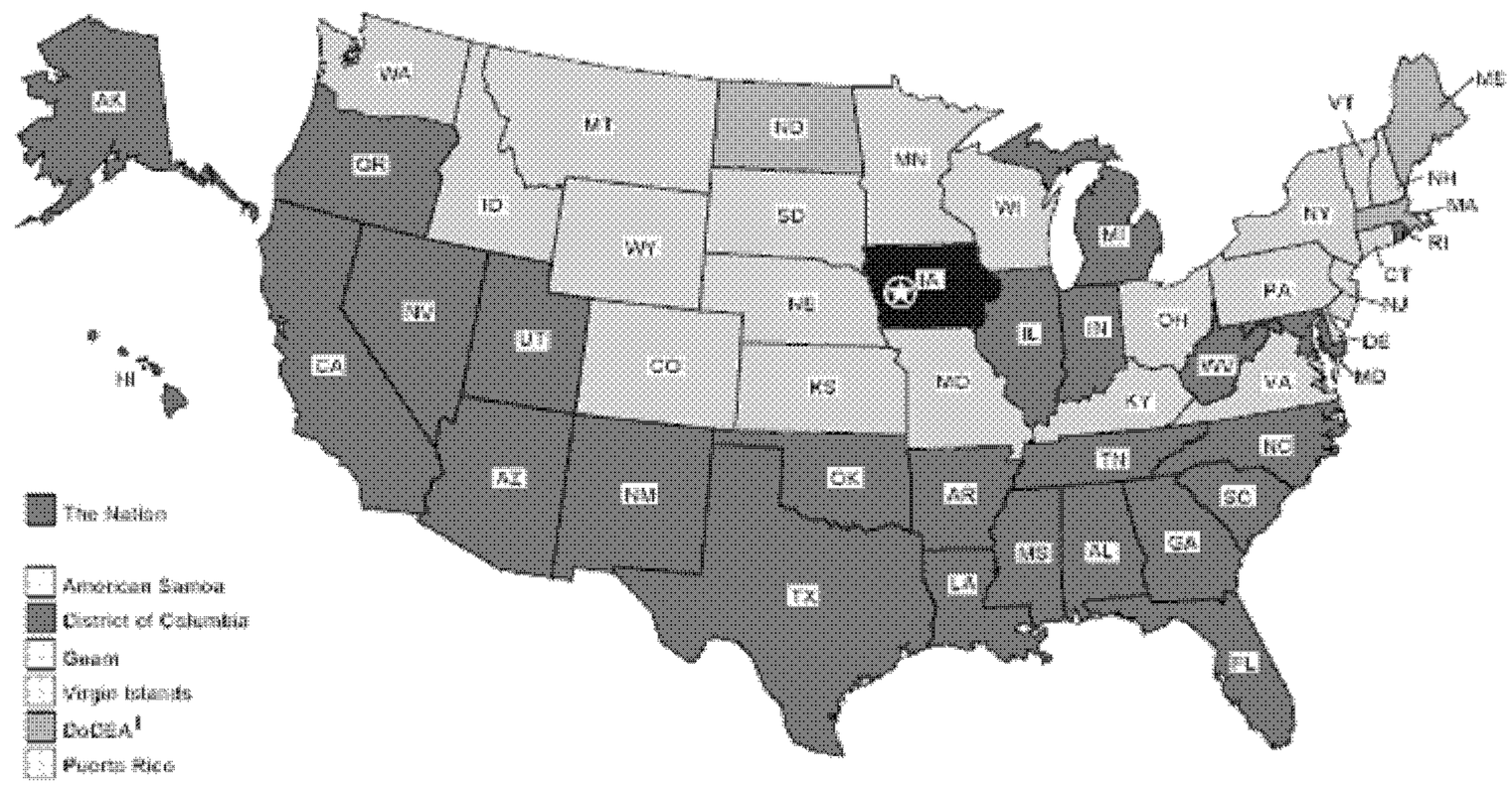
Figure 2A—2007 Iowa Grade 8 Reading All Students: Standard Score 267 (National Public 261)



Focal state/jurisdiction (Iowa)
Has a higher average scale score than the focal state/jurisdiction
Is not significantly different from the focal state/jurisdiction
Has a lower average scale score than the focal state/jurisdiction
Did not participate or did not meet minimum participation rates
Was not selected for comparison

[1] Department of Defense Education Activity schools (domestic and overseas).
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2007 Reading Assessments.

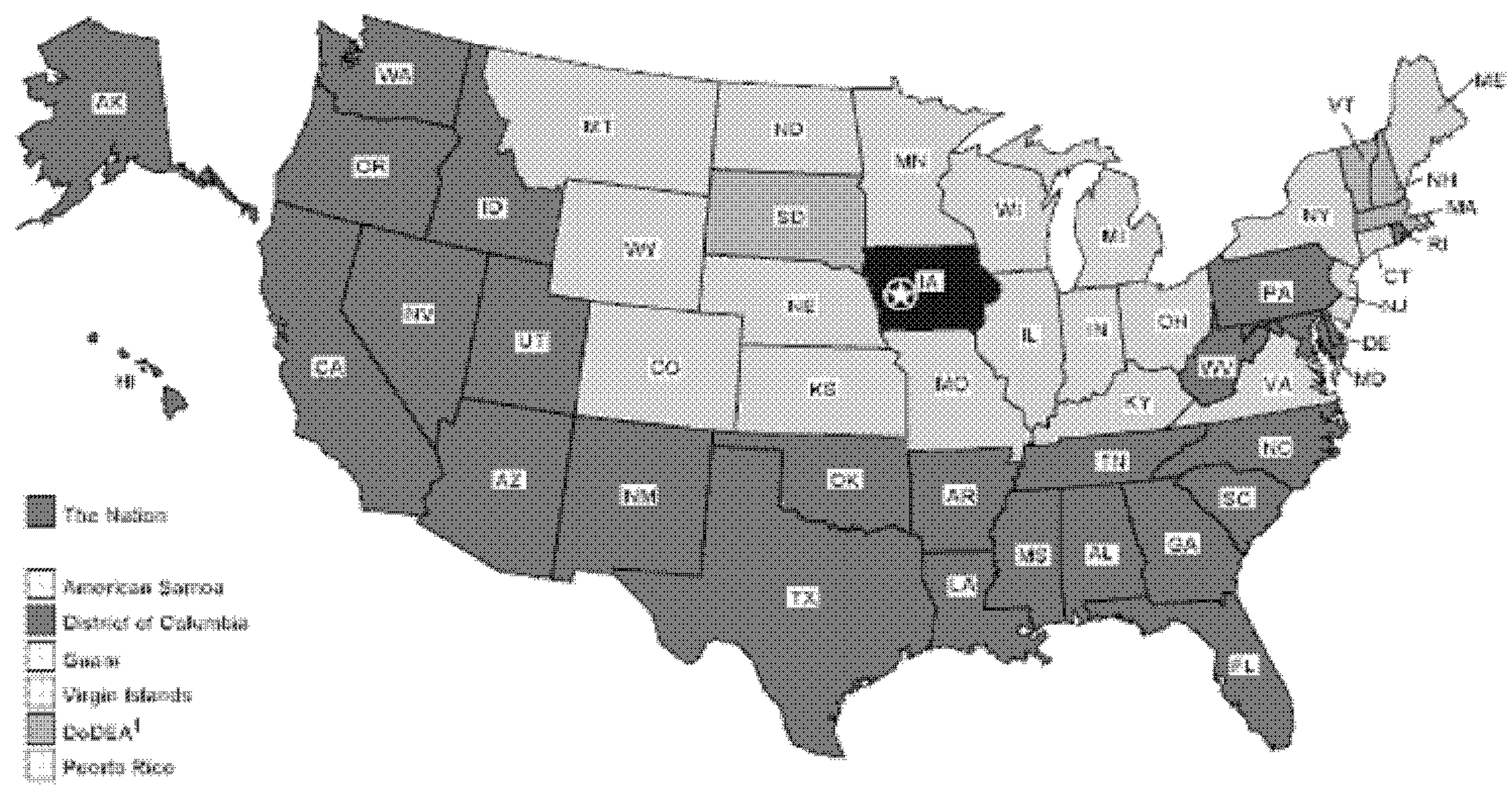
Figure 3A—2005 Iowa Grade 8 Reading All Students: Standard Score 267 (National Public 267)



Focal state/jurisdiction (Iowa)
Has a higher average scale score than the focal state/jurisdiction
Is not significantly different from the focal state/jurisdiction
Has a lower average scale score than the focal state/jurisdiction
Did not participate or did not meet minimum participation rates
Was not selected for comparison

[1] Department of Defense Education Activity schools (domestic and overseas).
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2005 Reading Assessments.

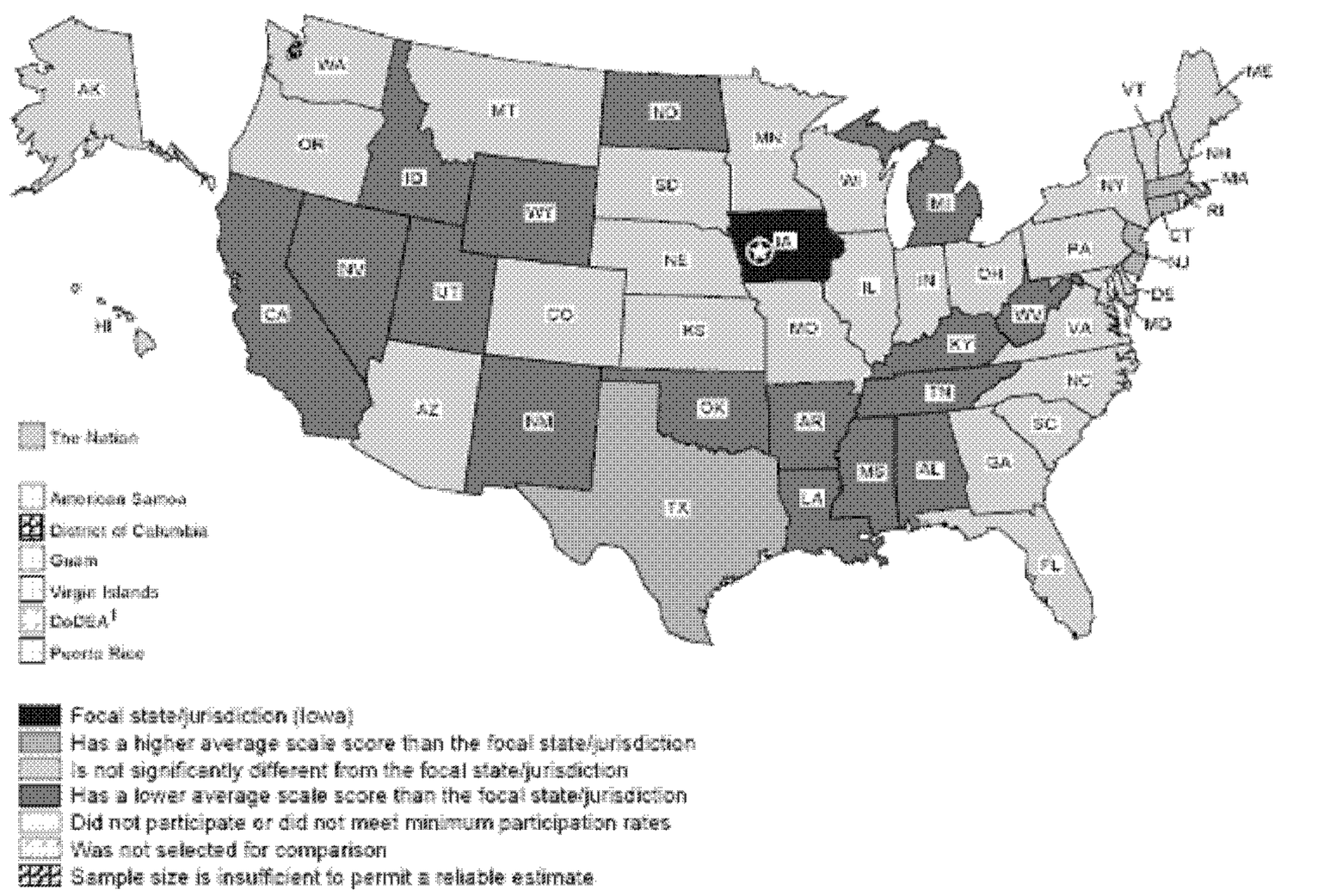
Figure 4A—2003 Iowa Grade 8 Reading All Students: Standard Score 268 (National Public 261)



Focal state/jurisdiction (Iowa)
Has a higher average scale score than the focal state/jurisdiction
Is not significantly different from the focal state/jurisdiction
Has a lower average scale score than the focal state/jurisdiction
Did not participate or did not meet minimum participation rates
Was not selected for comparison

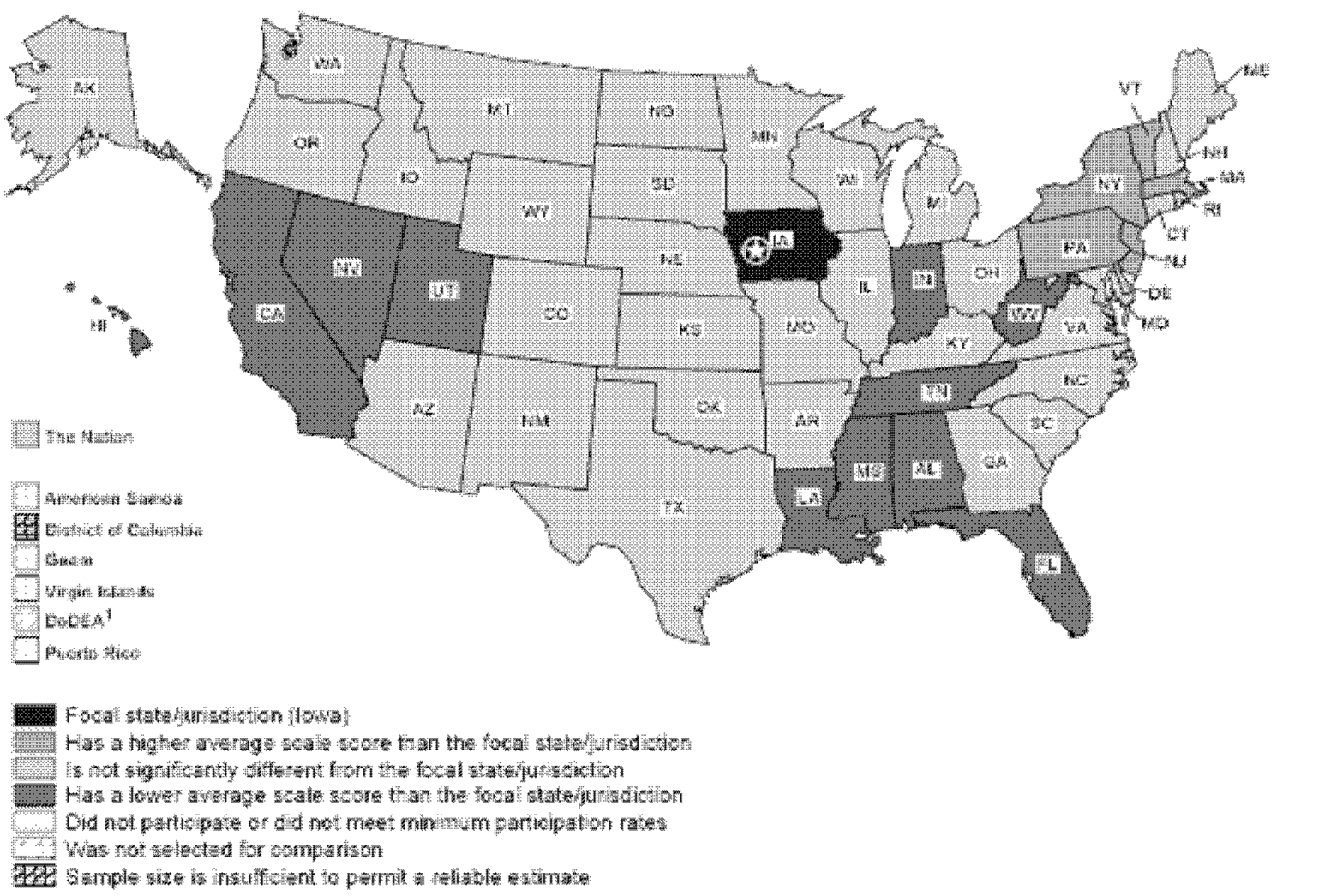
[1] Department of Defense Education Activity schools (domestic and overseas).
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2003 Reading Assessments.

Figure 5A— White - Not Eligible for Free or Reduced Price Lunch - Not Special Education - Not English Language Learners: Standard Score 278 (National Public 277)



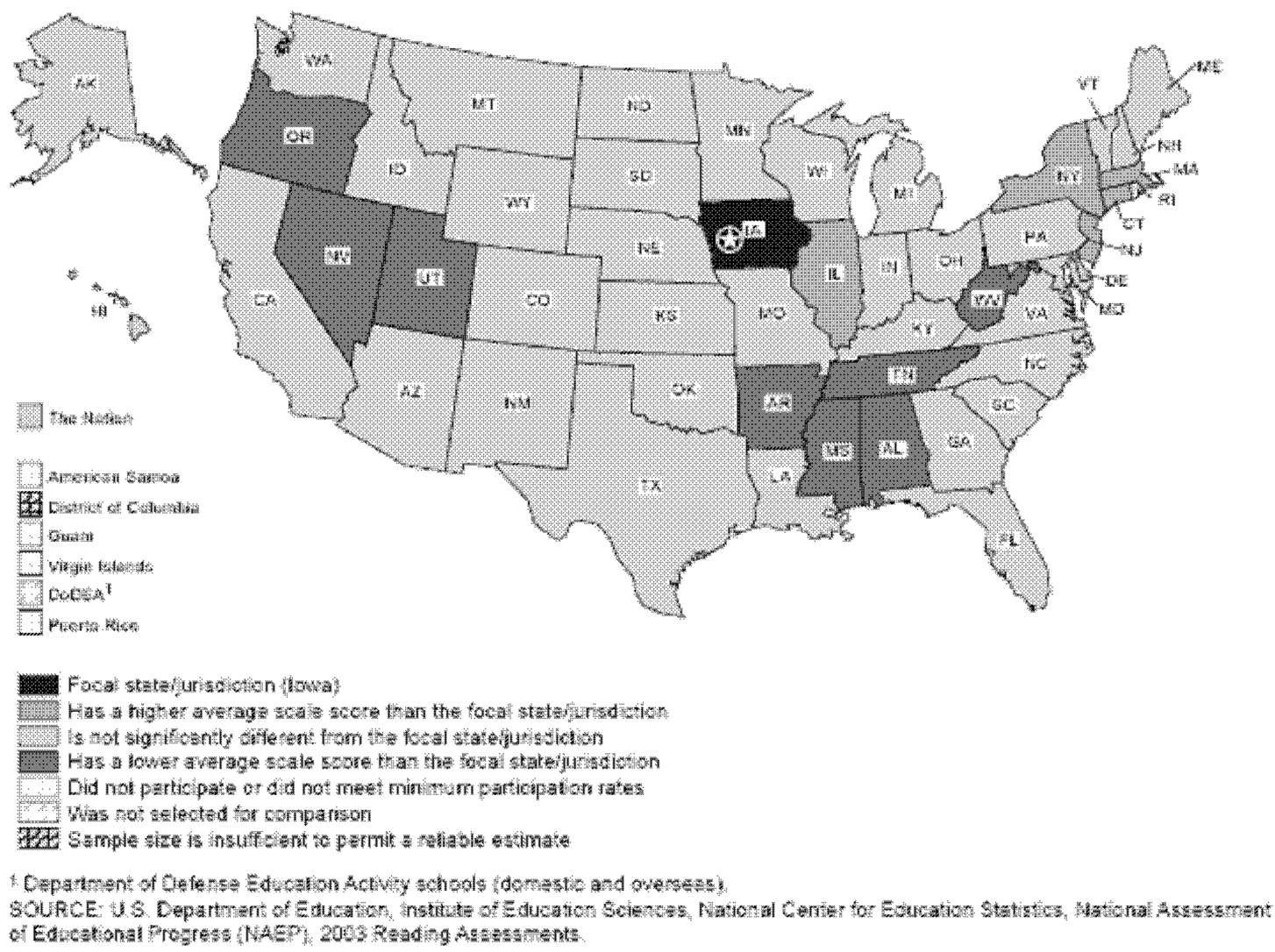
[1] Department of Defense Education Activity schools (domestic and overseas).
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2007 Reading Assessments.

Figure 6A—2005 Iowa Grade 8 Reading White, Not Eligible for Free or Reduced Price Lunch - Not Special Education - Not English Language Learners: Standard Score 276 (National Public 276)



[1] Department of Defense Education Activity schools (domestic and overseas).
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2005 Reading Assessments.

Figure 7A—2003 Iowa Grade 8 Reading White, Not Eligible for Free or Reduced Price Lunch - Not Special Education - Not English Language Learners: Standard Score 277 (National Public 277)



[1] Department of Defense Education Activity schools (domestic and overseas).
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2003 Reading Assessments.

Figure 8A—Iowa Compared to the Nation: Grade 8 Mathematics

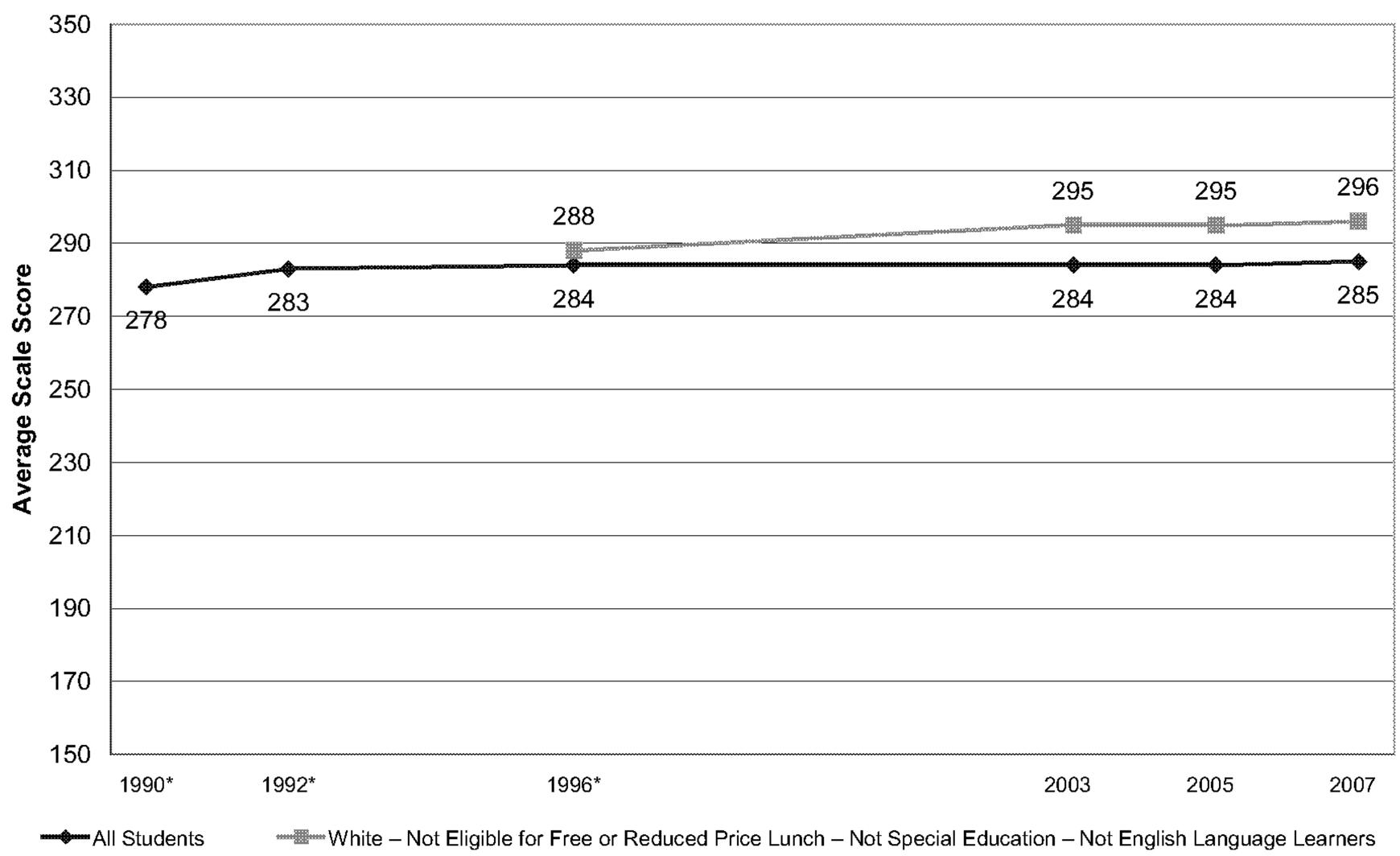
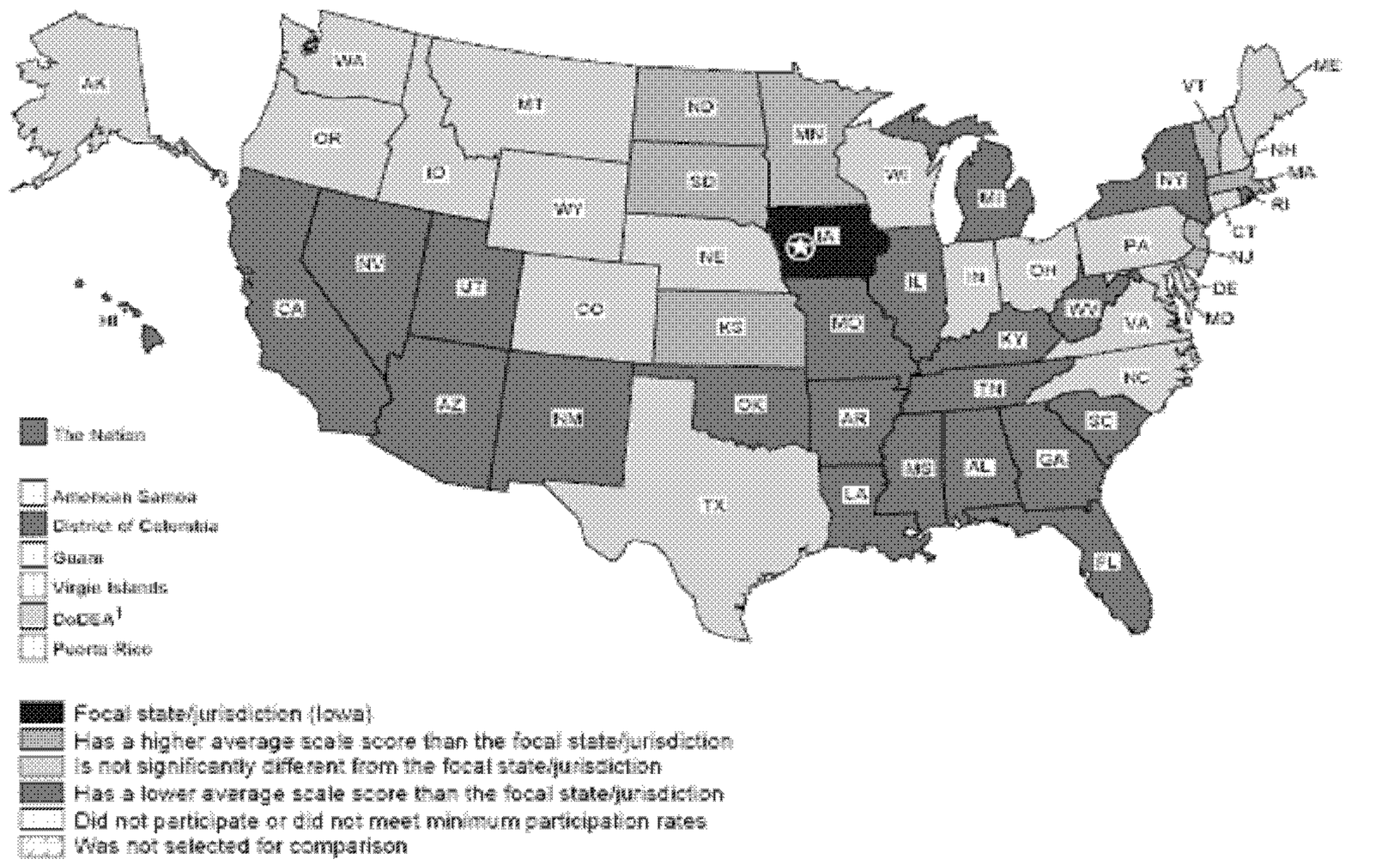
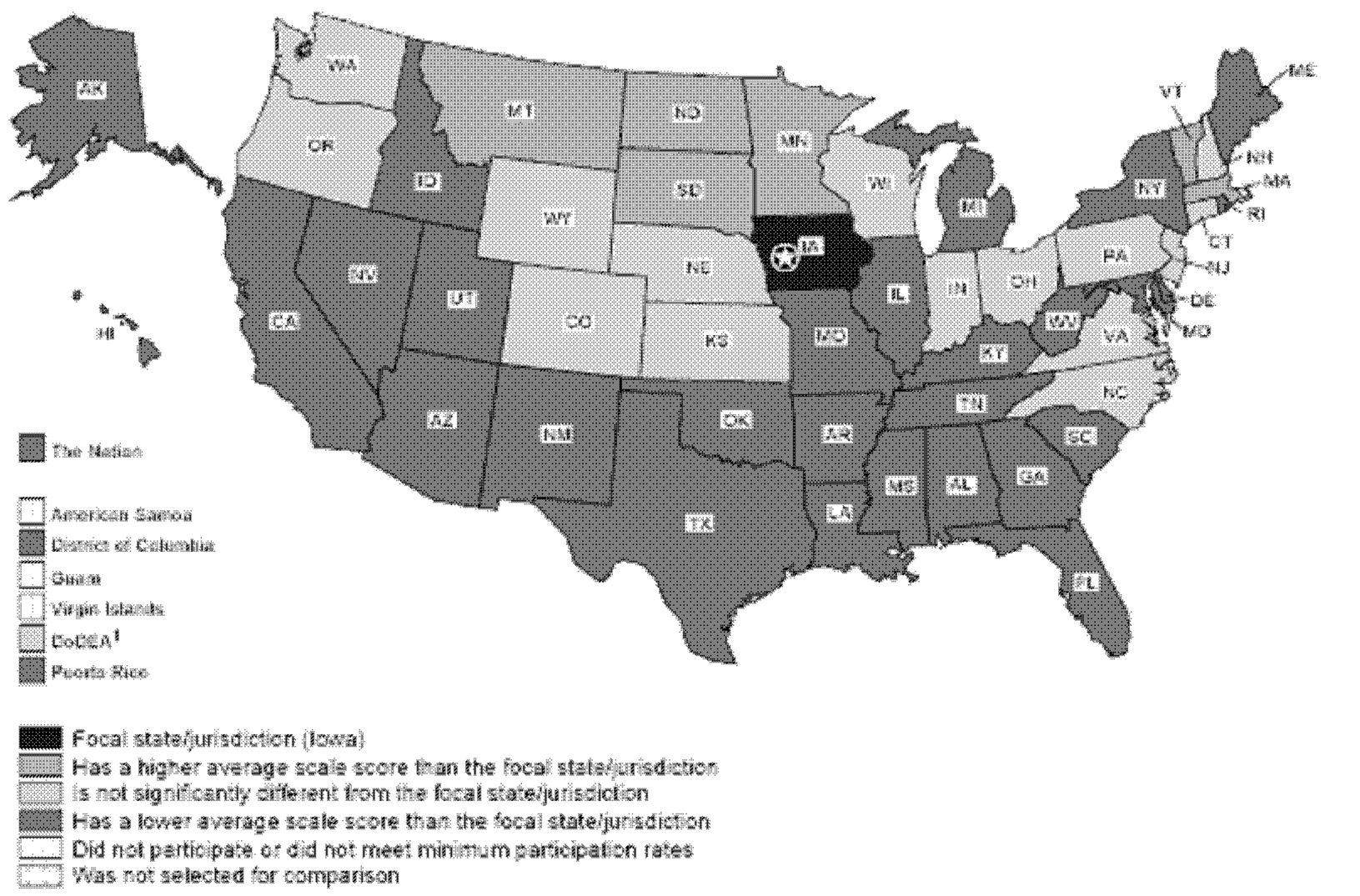


Figure 9A—2007 Iowa Grade 8 Mathematics All Students: Standard Score 285 (National Public 280)



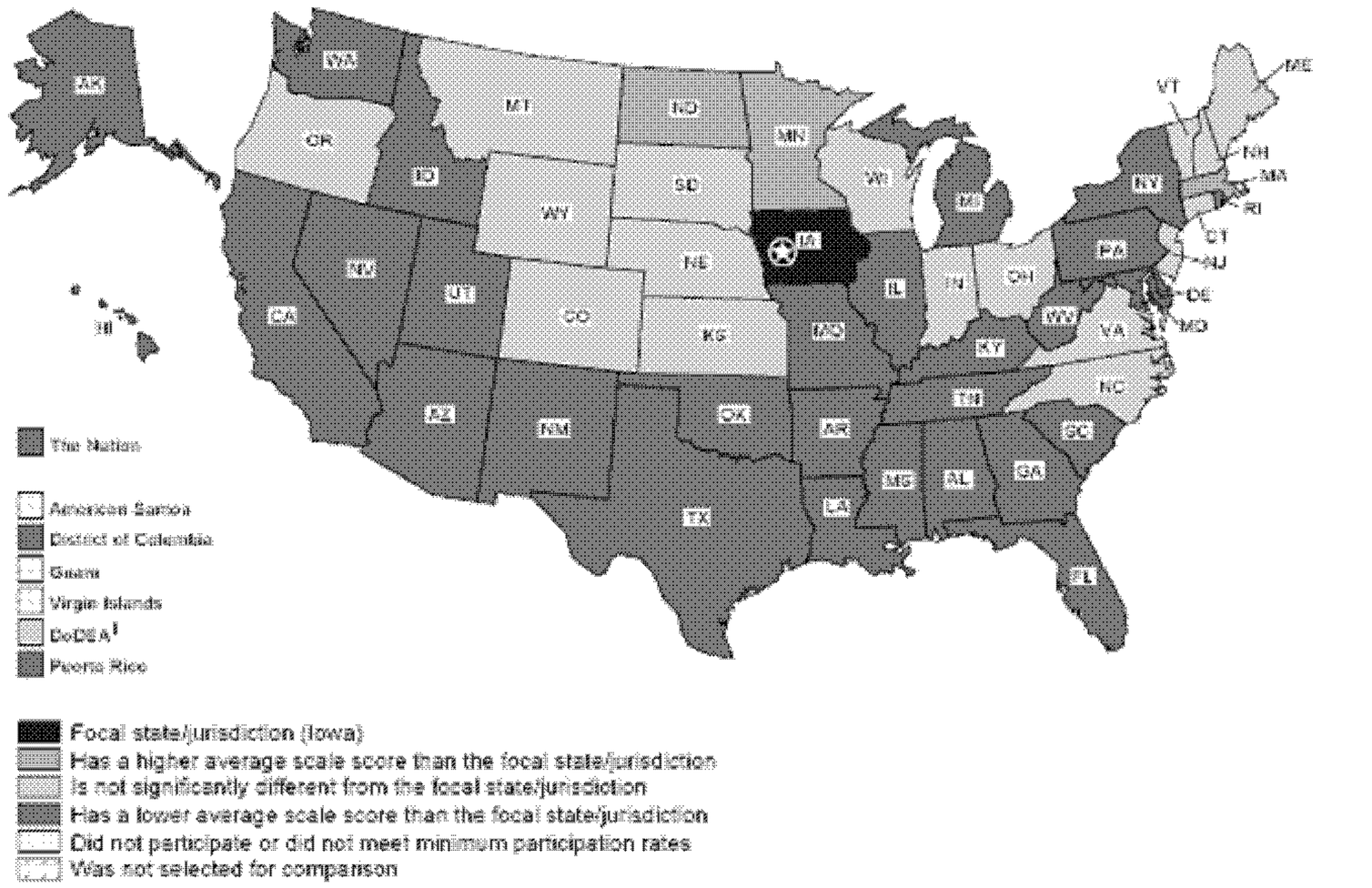
[1] Department of Defense Education Activity schools (domestic and overseas).
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2007 Mathematics Assessments.

Figure 10A—2005 Iowa Grade 8 Mathematics All Students: Standard Score 284 (National Public 278)



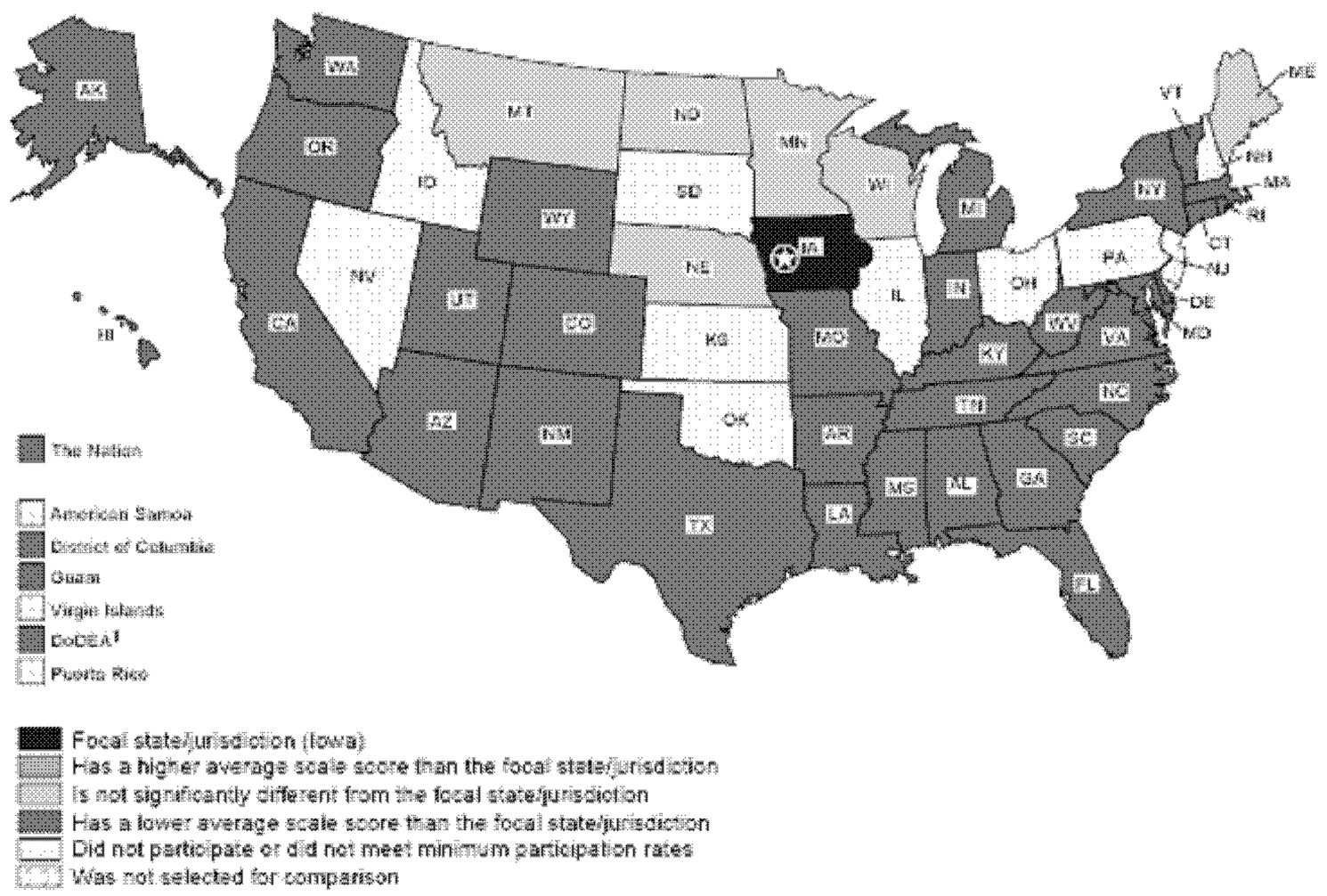
[1] Department of Defense Education Activity schools (domestic and overseas).
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2005 Mathematics Assessments.

Figure 11A—2003 Iowa Grade 8 Mathematics All Students: Standard Score 284 (National Public 276)



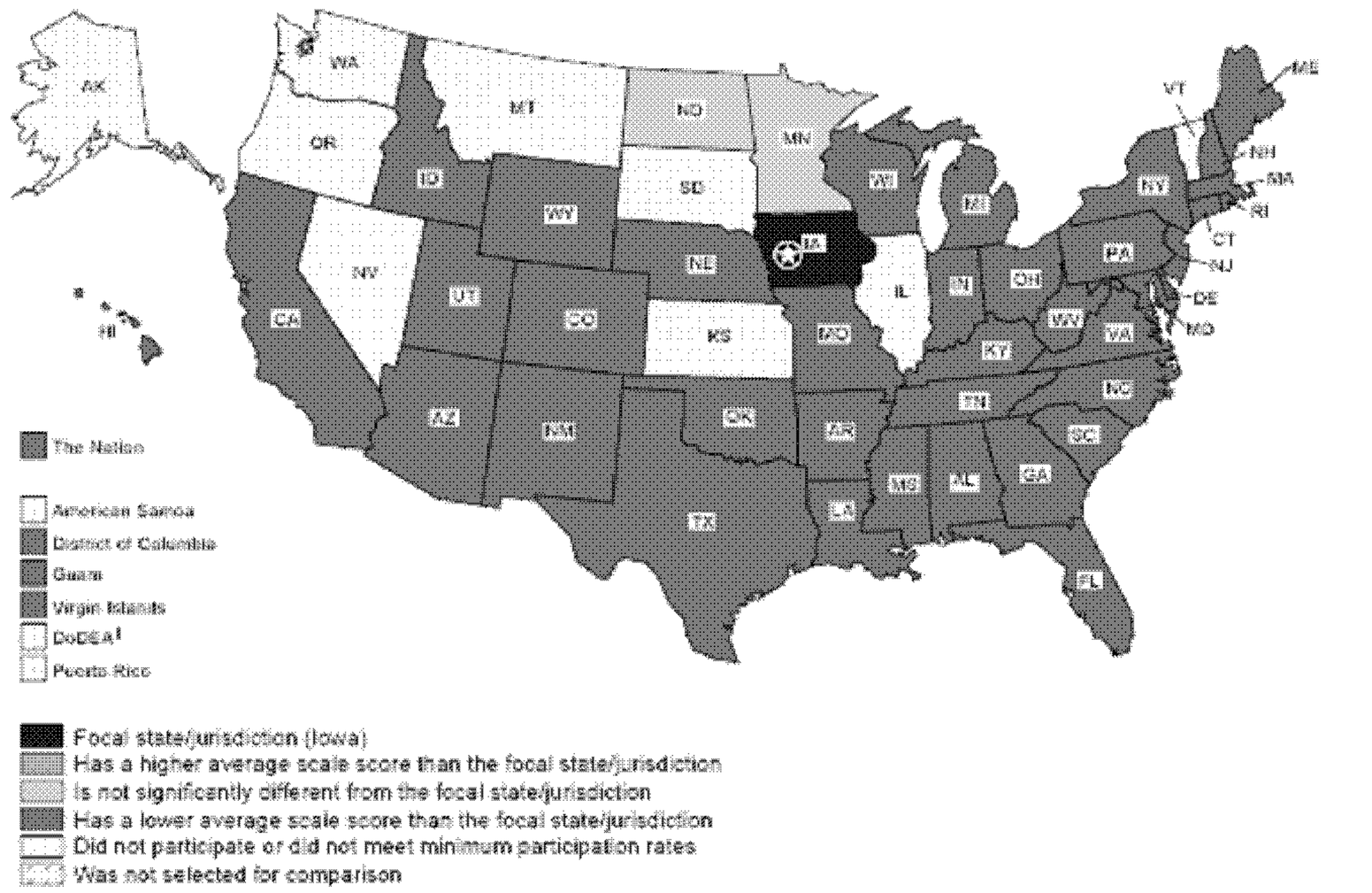
[1] Department of Defense Education Activity schools (domestic and overseas).
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2003 Mathematics Assessments.

Figure 12A—1996 Iowa Grade 8 Mathematics All Students: Standard Score 284 (National Public 271)



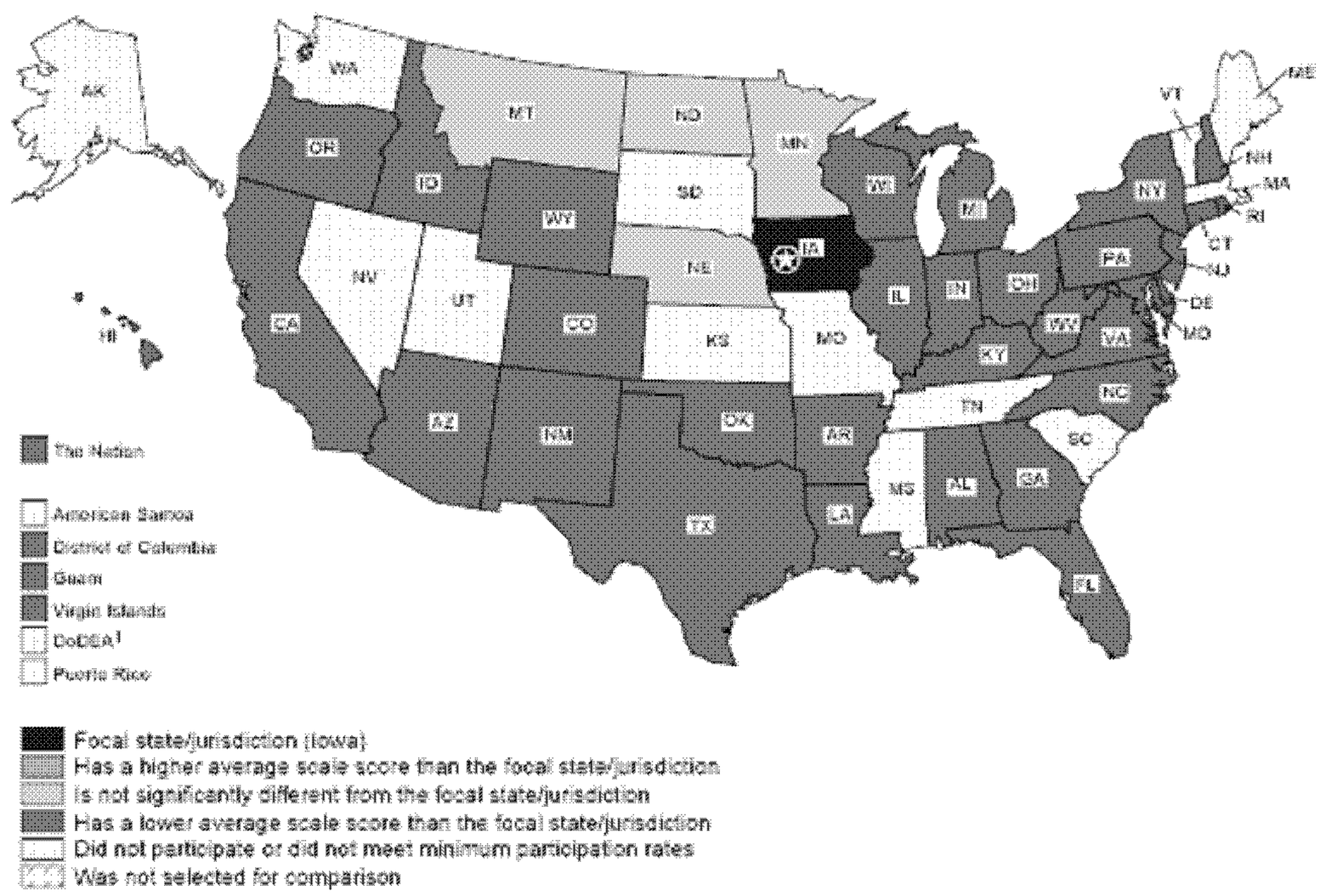
[1] Department of Defense Education Activity schools (domestic and overseas).
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 1996 Mathematics Assessments.

Figure 13A—1992 Iowa Grade 8 Mathematics All Students: Standard Score 283 (National Public 267)



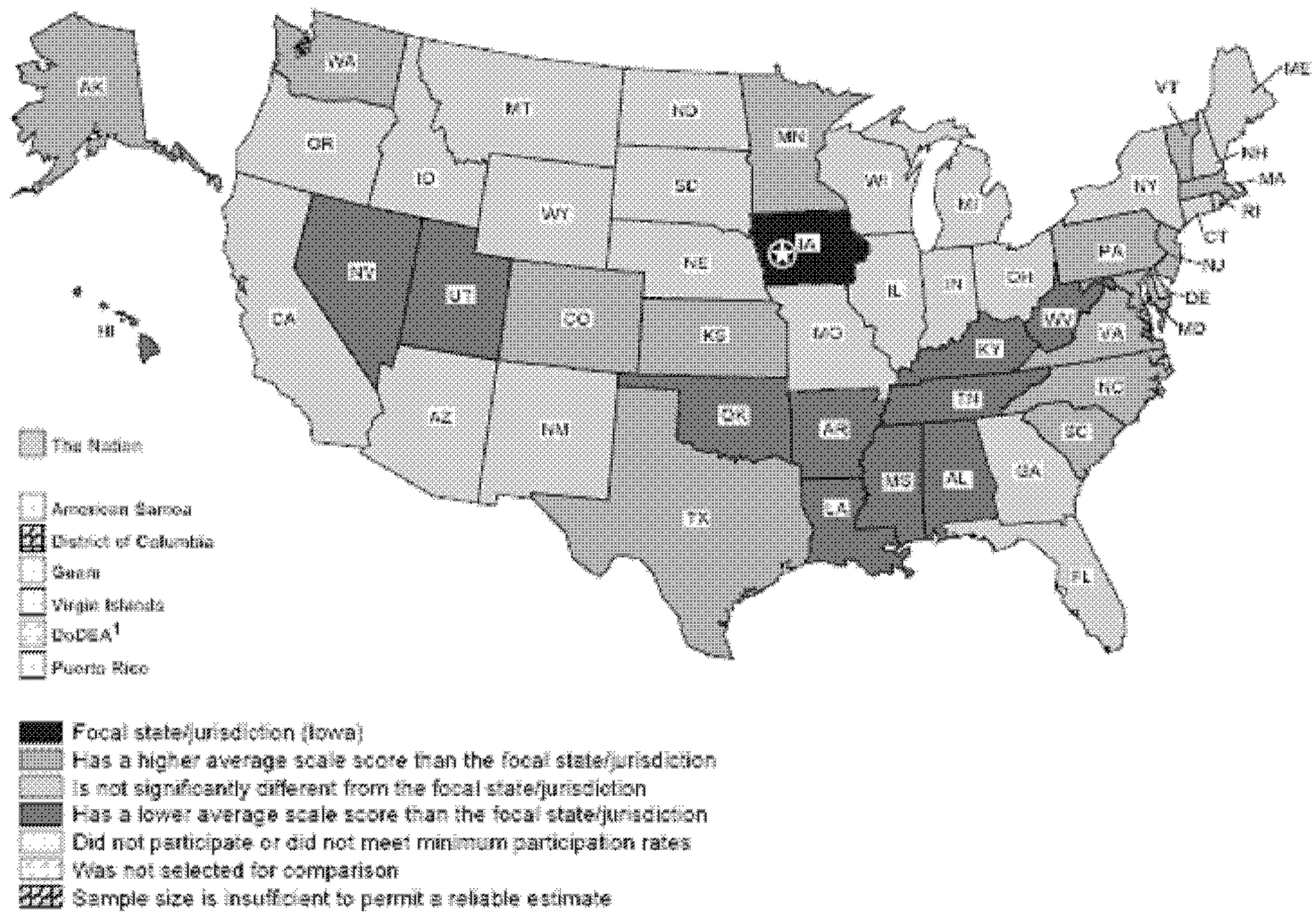
[1] Department of Defense Education Activity schools (domestic and overseas).
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 1992 Mathematics Assessments.

Figure 14A—1990 Iowa Grade 8 Mathematics All Students: Standard Score 278 (National Public 262)



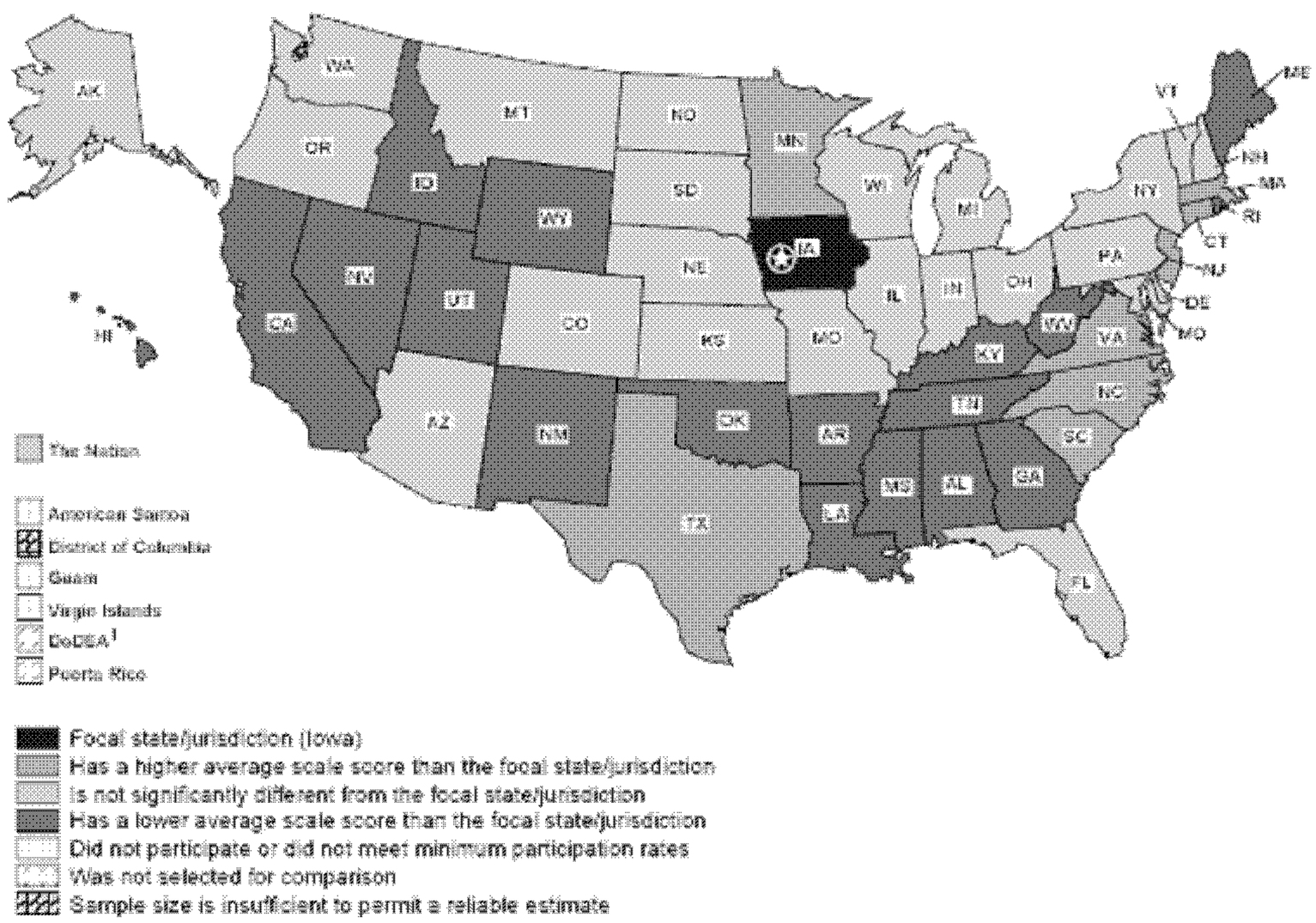
[1] Department of Defense Education Activity schools (domestic and overseas).
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 1990 Mathematics Assessments.

Figure 15A—2007 Iowa Grade 8 Mathematics White, Not Eligible for Free or Reduced Price Lunch - Not Special Education - Not English Language Learners: Standard Score 296 (National Public 298)



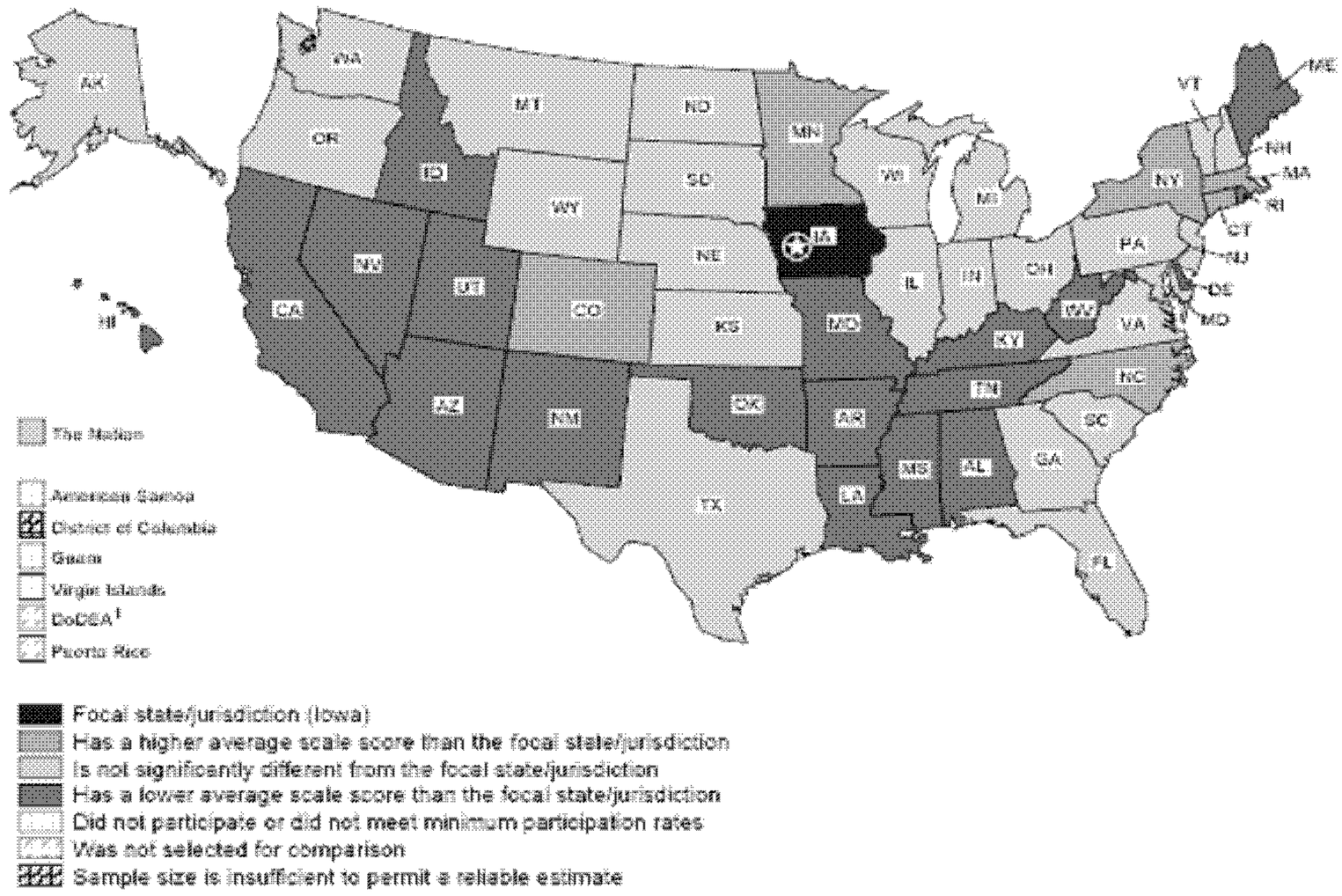
[1] Department of Defense Education Activity schools (domestic and overseas).
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2007 Mathematics Assessments.

Figure 16A—2005 Iowa Grade 8 Mathematics White, Not Eligible for Free or Reduced Price Lunch - Not Special Education - Not English Language Learners: Standard Score 295 (National Public 295)



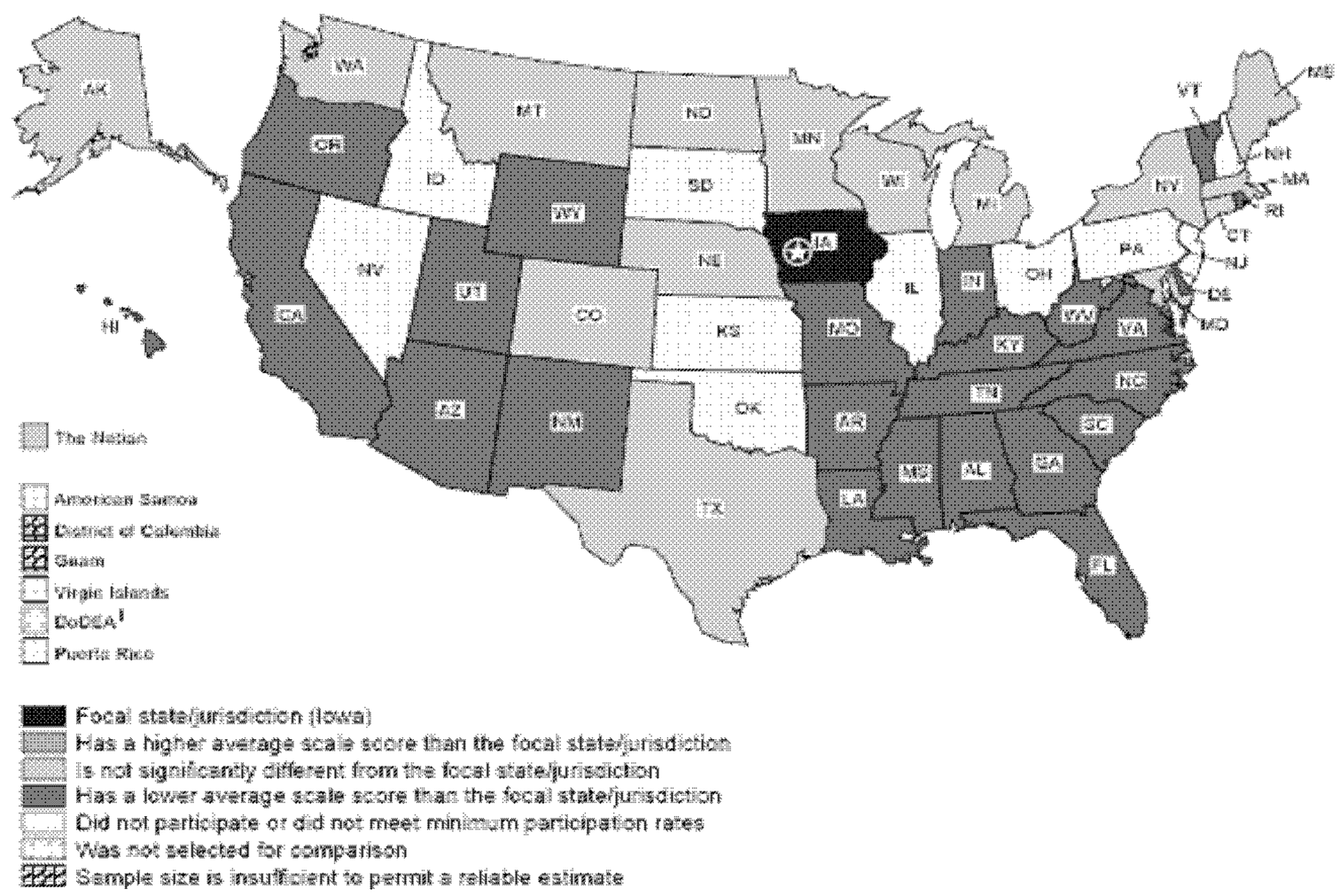
[1] Department of Defense Education Activity schools (domestic and overseas).
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2005 Mathematics Assessments.

Figure 17A—2003 Iowa Grade 8 Mathematics All Students: White, Not Eligible for Free or Reduced Price Lunch - Not Special Education - Not English Language Learners: Standard Score 295 (National Public 294)



[1] Department of Defense Education Activity schools (domestic and overseas).
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2003 Mathematics Assessments.

Figure 18A—1996 Iowa Grade 8 Mathematics White, Not Eligible for Free or Reduced Price Lunch - Not Special Education - Not English Language Learners: Standard Score 288 (National Public 284)



[1] Department of Defense Education Activity schools (domestic and overseas).

Figure 19A—Iowa Compared to the Nation: Grade 4 Reading

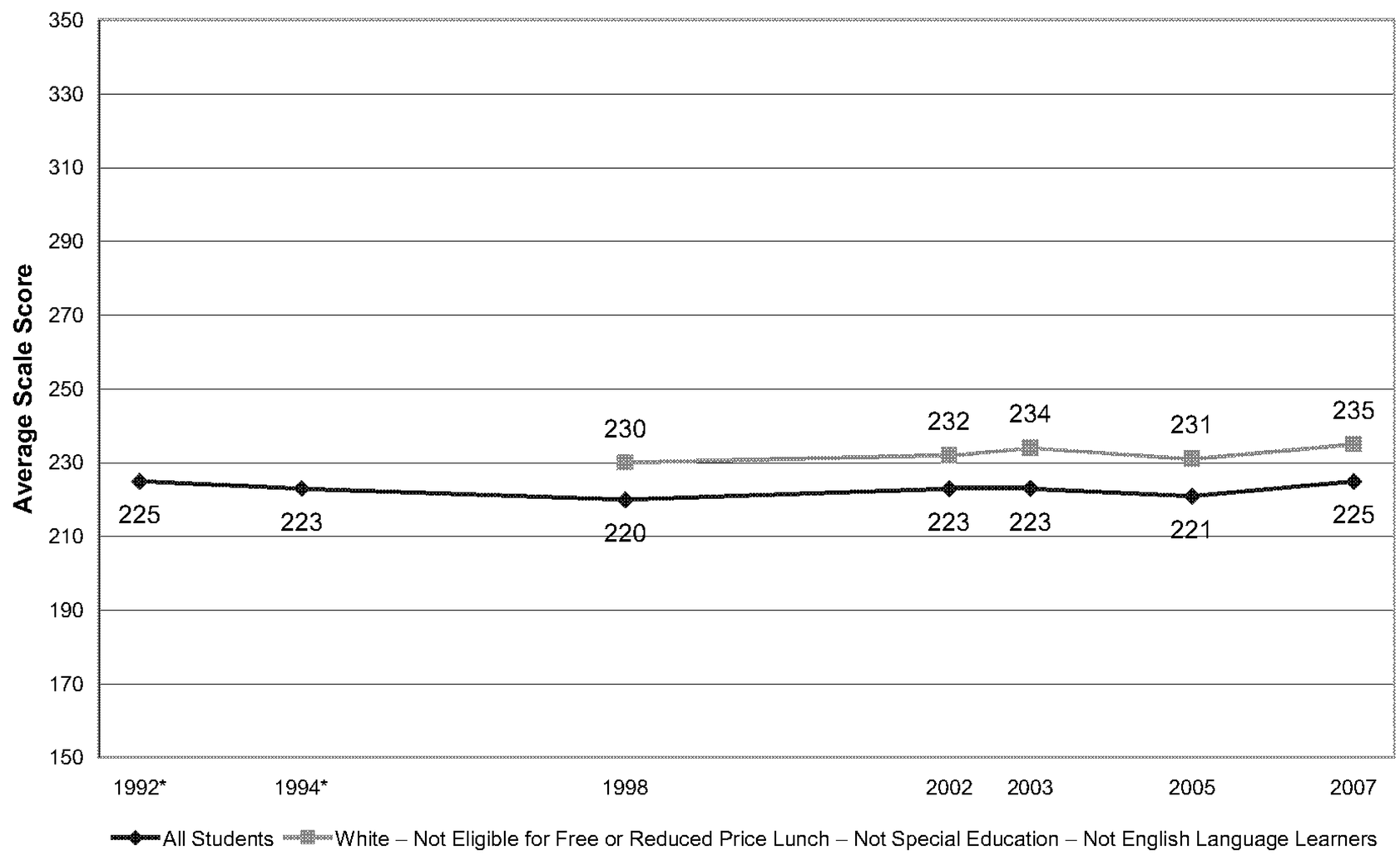
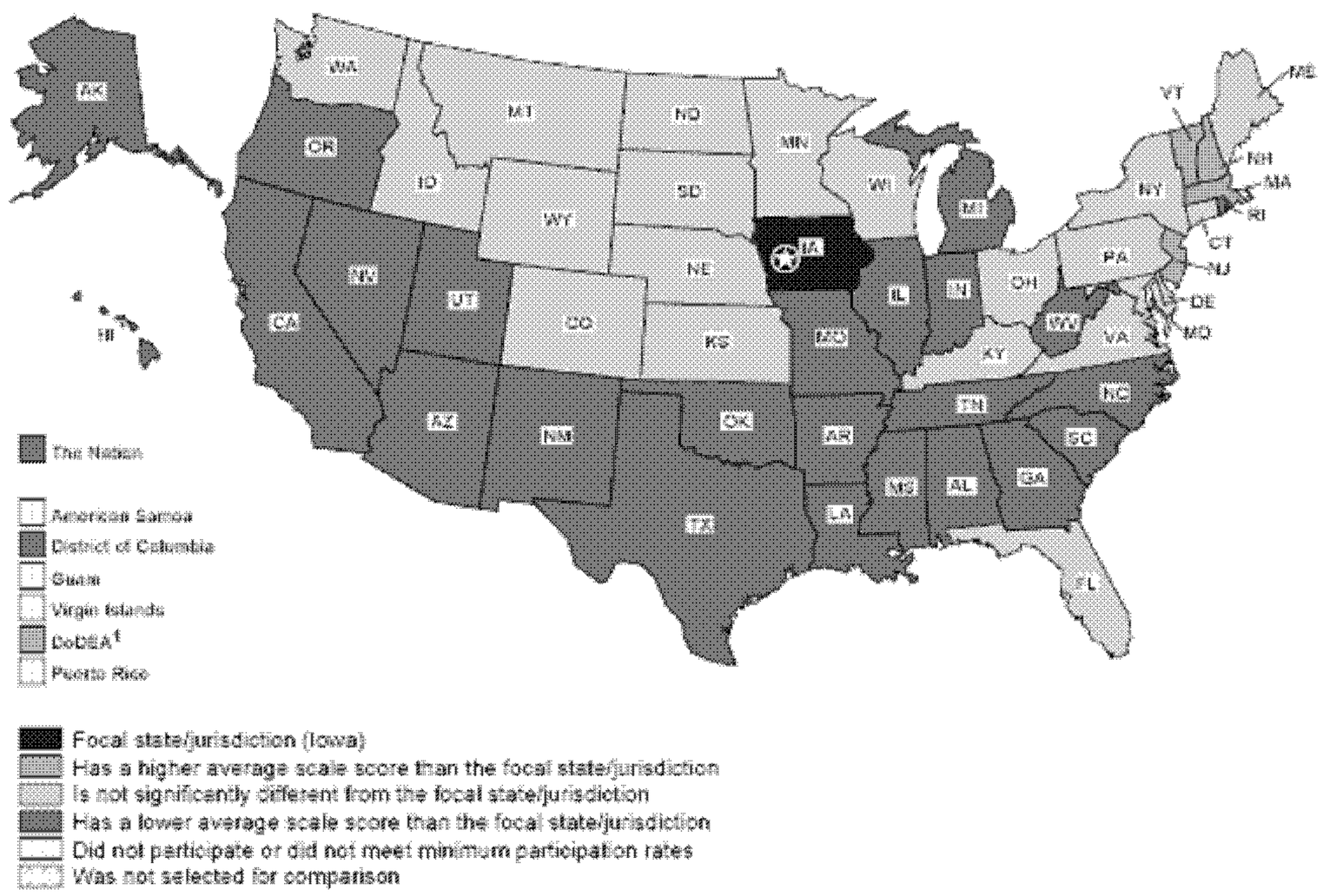
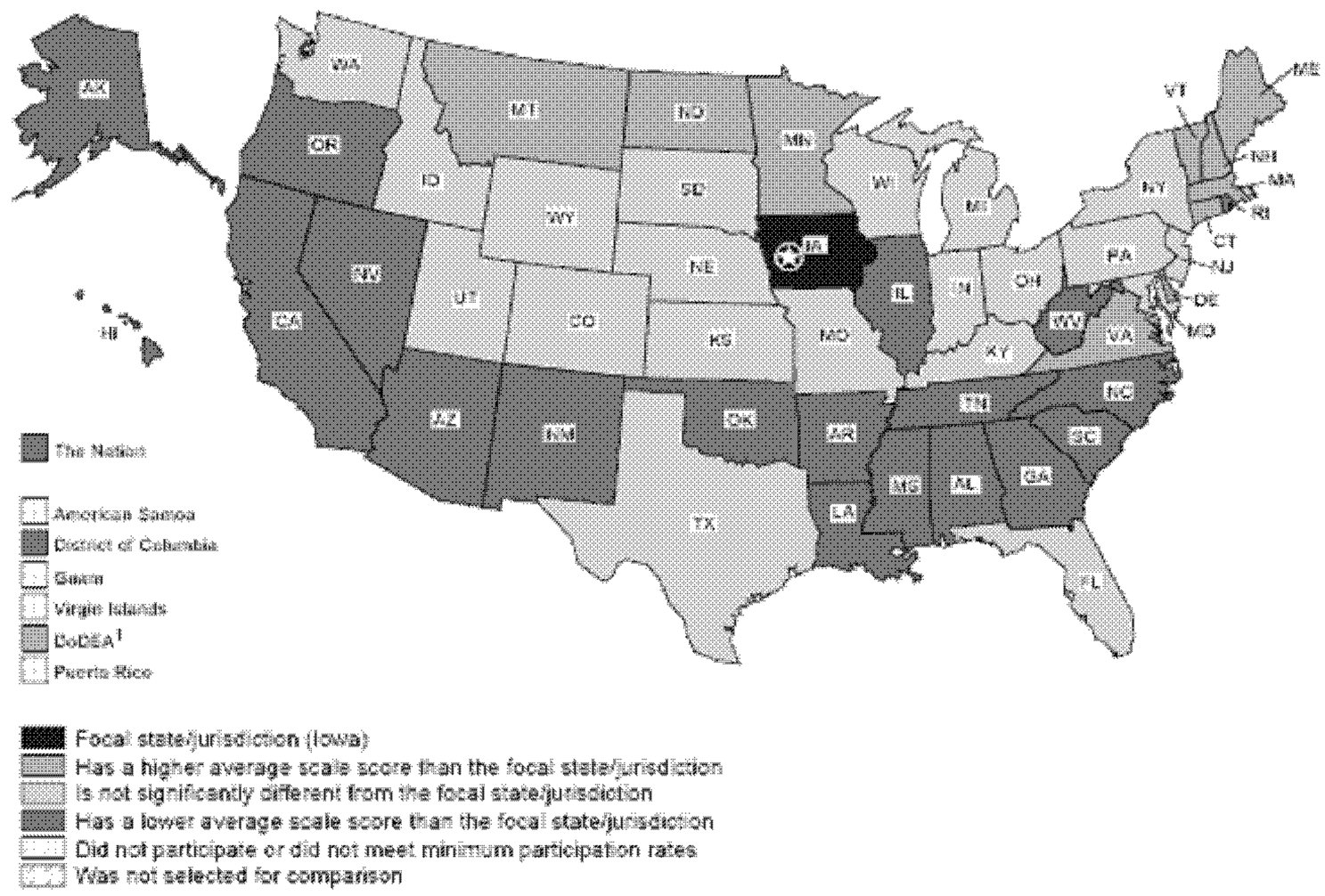


Figure 20A—2007 Iowa Grade 4 Reading All Students: Standard Score 225 (National Public 220)



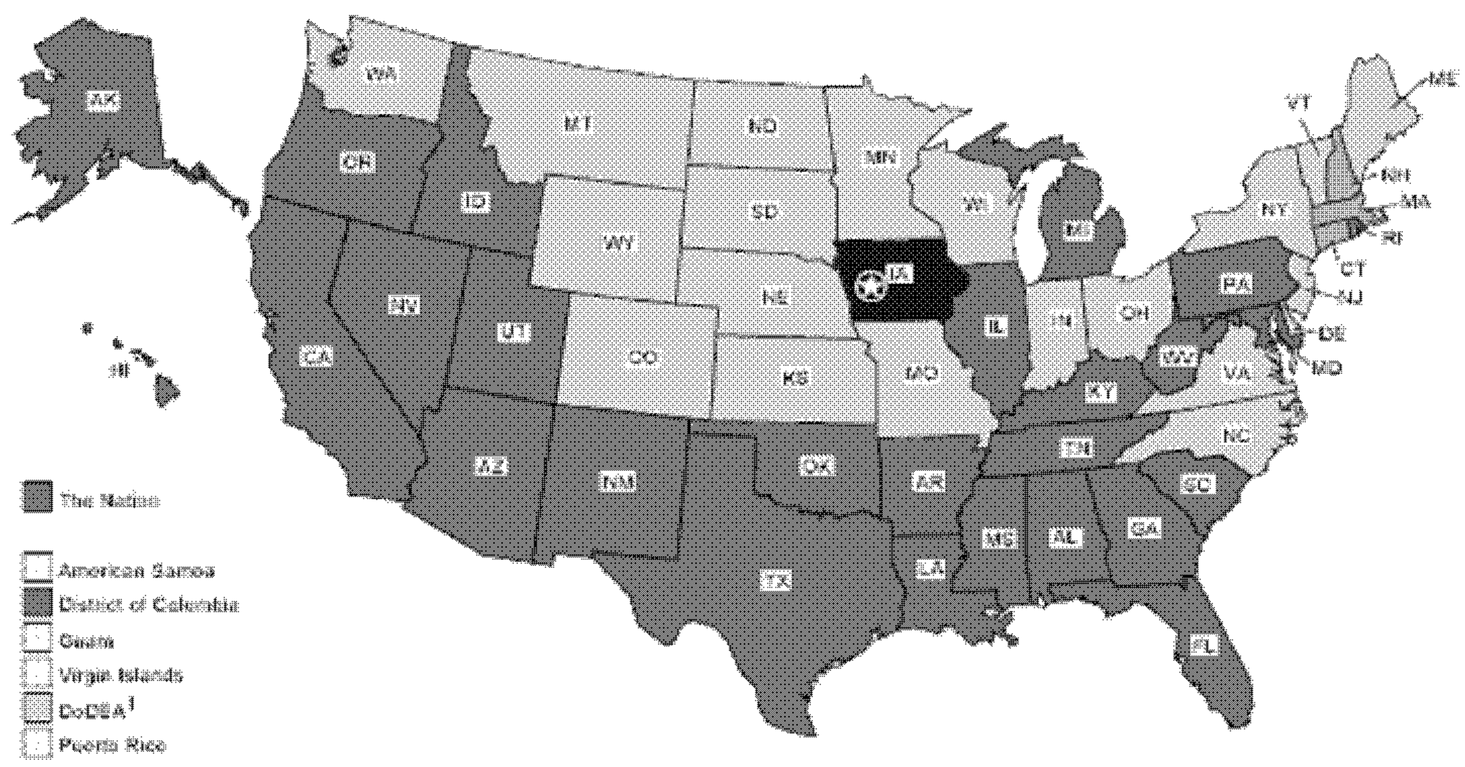
[1] Department of Defense Education Activity schools (domestic and overseas).
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2007 Reading Assessments.

Figure 21A—2005 Iowa Grade 4 Reading All Students: Standard Score 221 (National Public 217)



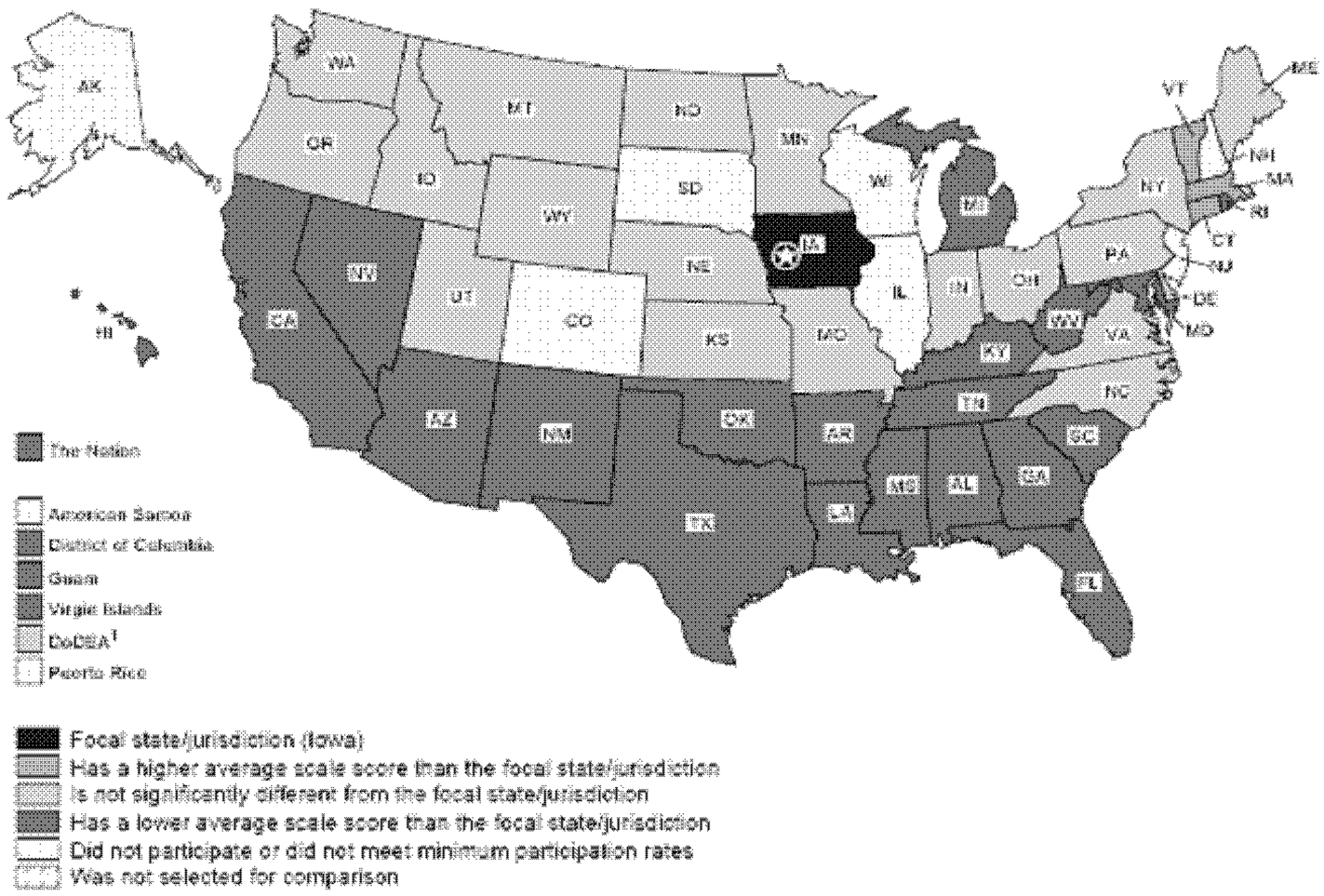
[1] Department of Defense Education Activity schools (domestic and overseas).
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2005 Reading Assessments.

Figure 22A—2003 Iowa Grade 4 Reading All Students: Standard Score 223 (National Public 216)



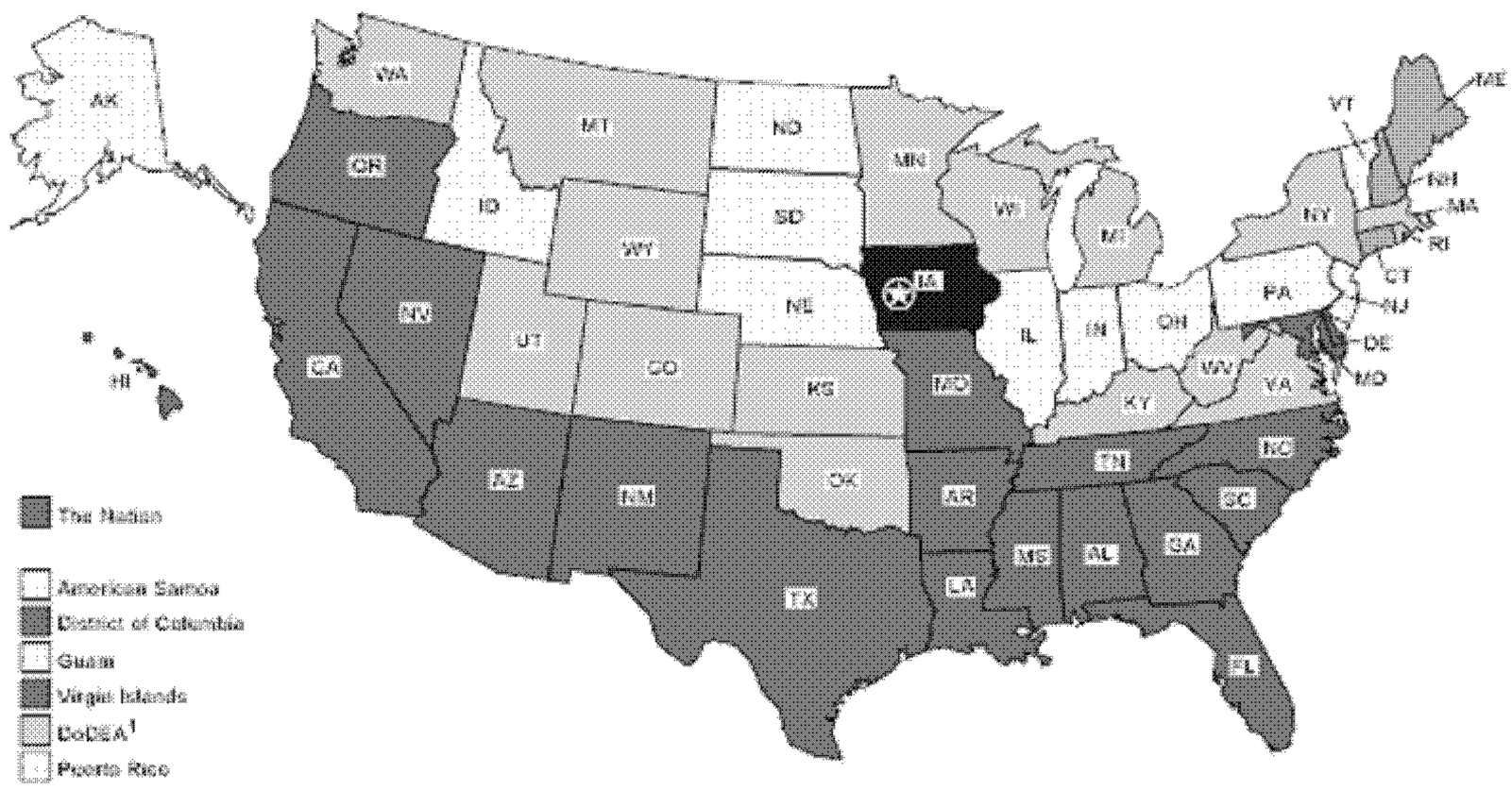
[1] Department of Defense Education Activity schools (domestic and overseas).
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2003 Reading Assessments.

Figure 23A—2002 Iowa Grade 4 Reaing All Students: Standard Score 223 (National Public 217)



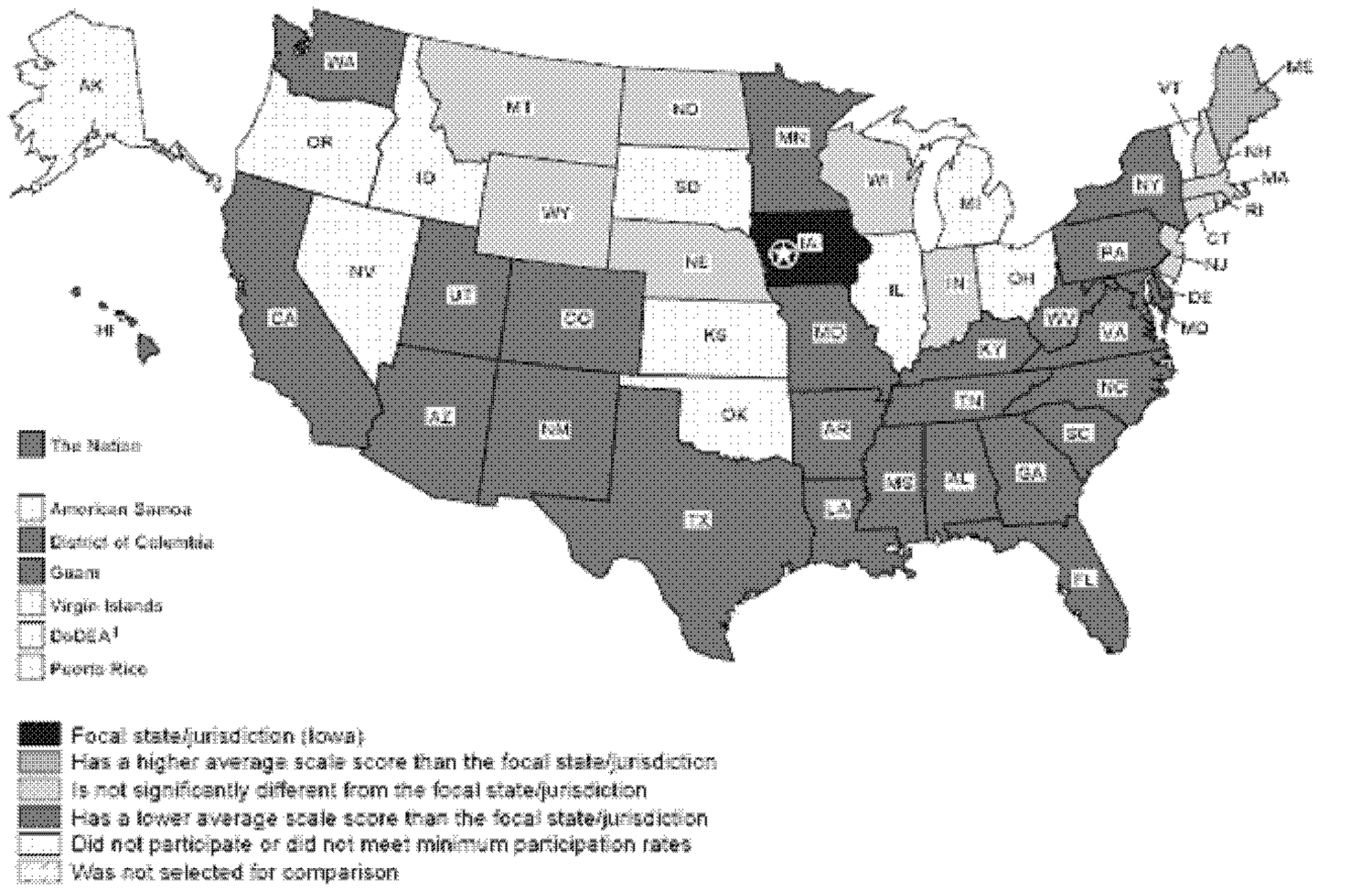
[1] Department of Defense Education Activity schools (domestic and overseas).
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2002 Reading Assessments.

Figure 24A—1996 Iowa Grade 4 Reading All Students: Standard Score 220 (National Public 213)



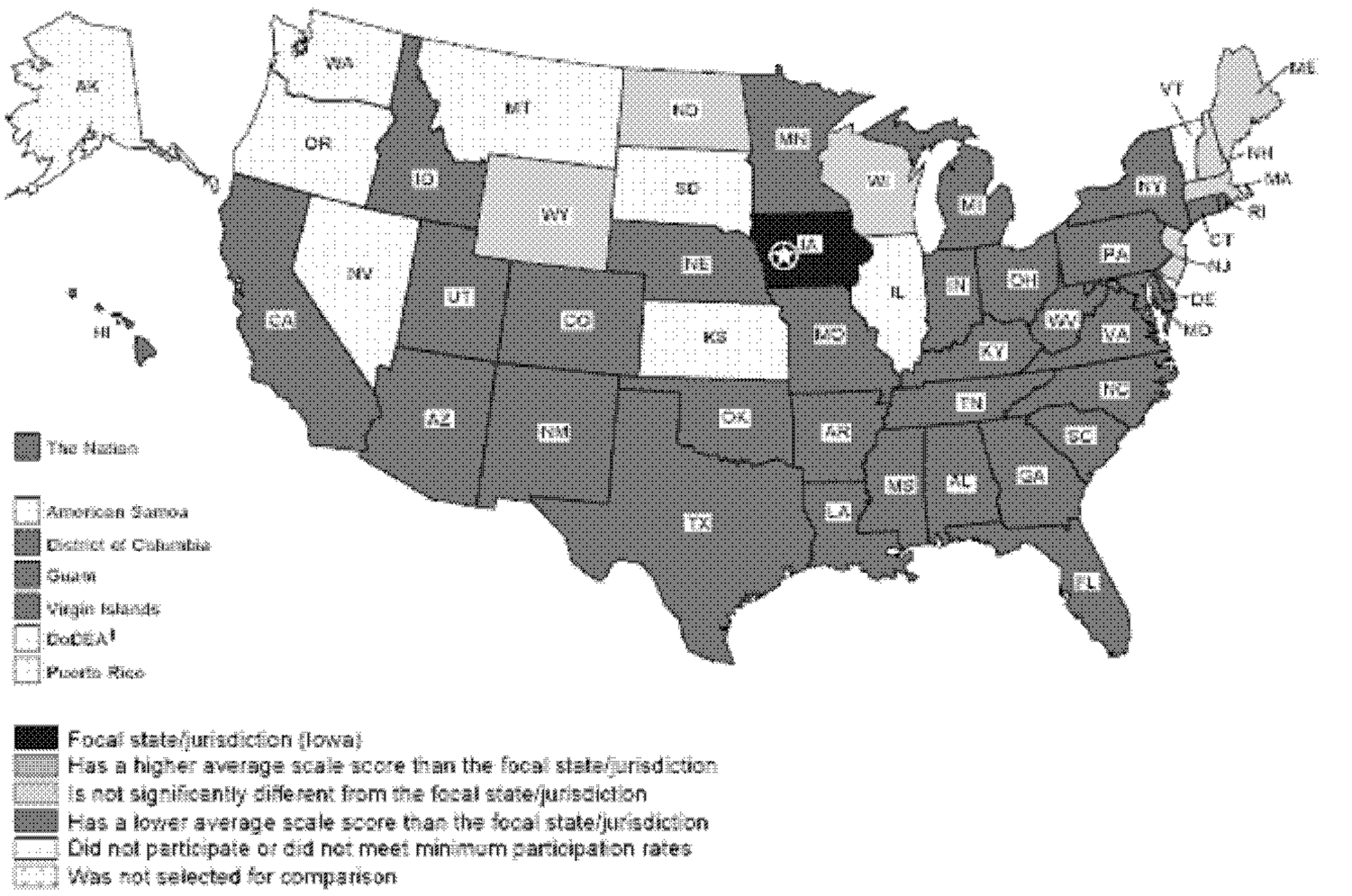
[1] Department of Defense Education Activity schools (domestic and overseas).
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 1996 Reading Assessments.

Figure 25A—1994 Iowa Grade 4 Reading All Students: Standard Score 223 (National Public 212)



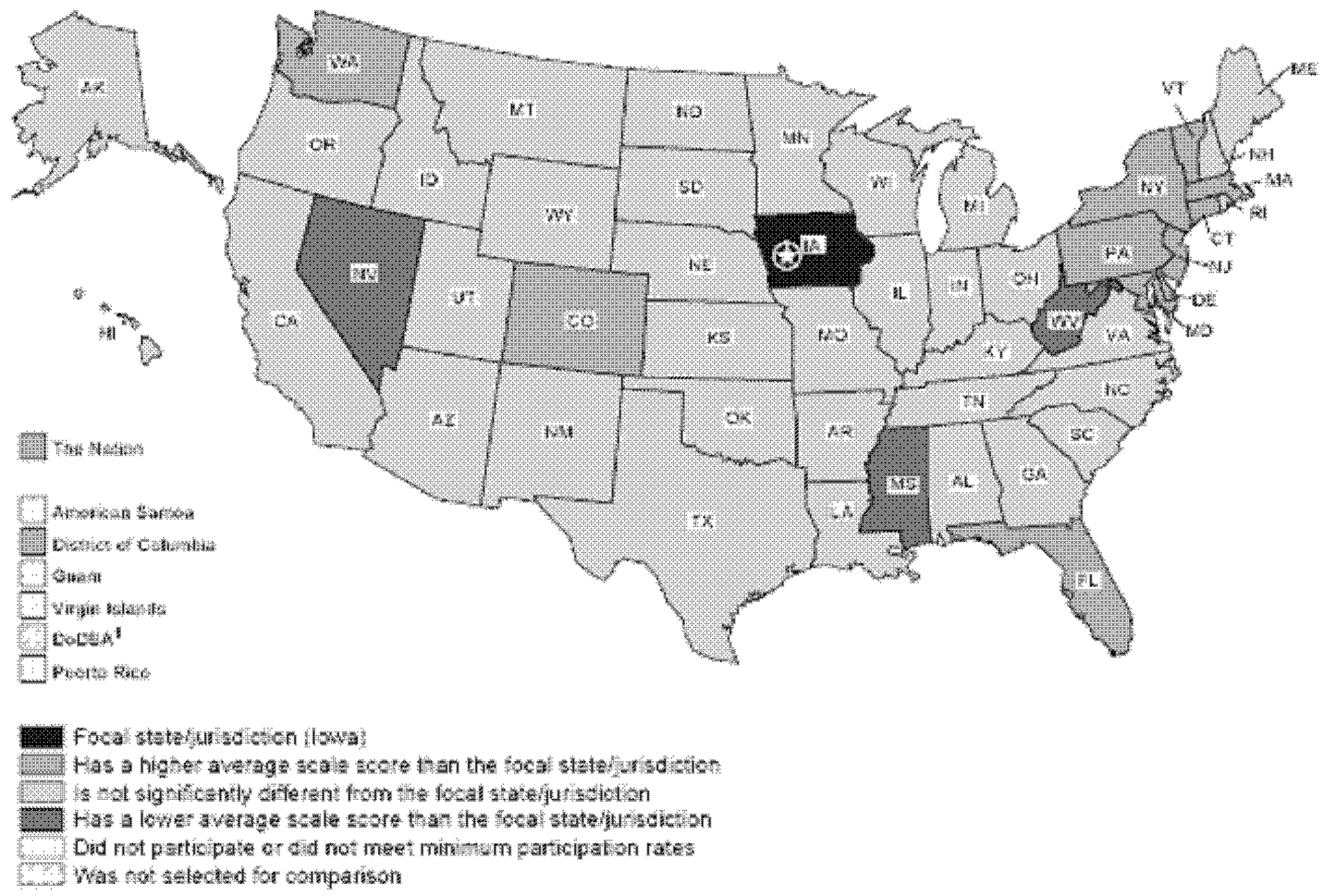
[1] Department of Defense Education Activity schools (domestic and overseas).
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 1994 Reading Assessments.

Figure 26A—1992 Iowa Grade 4 Reading All Students: Standard Score 225 (National Public 215)



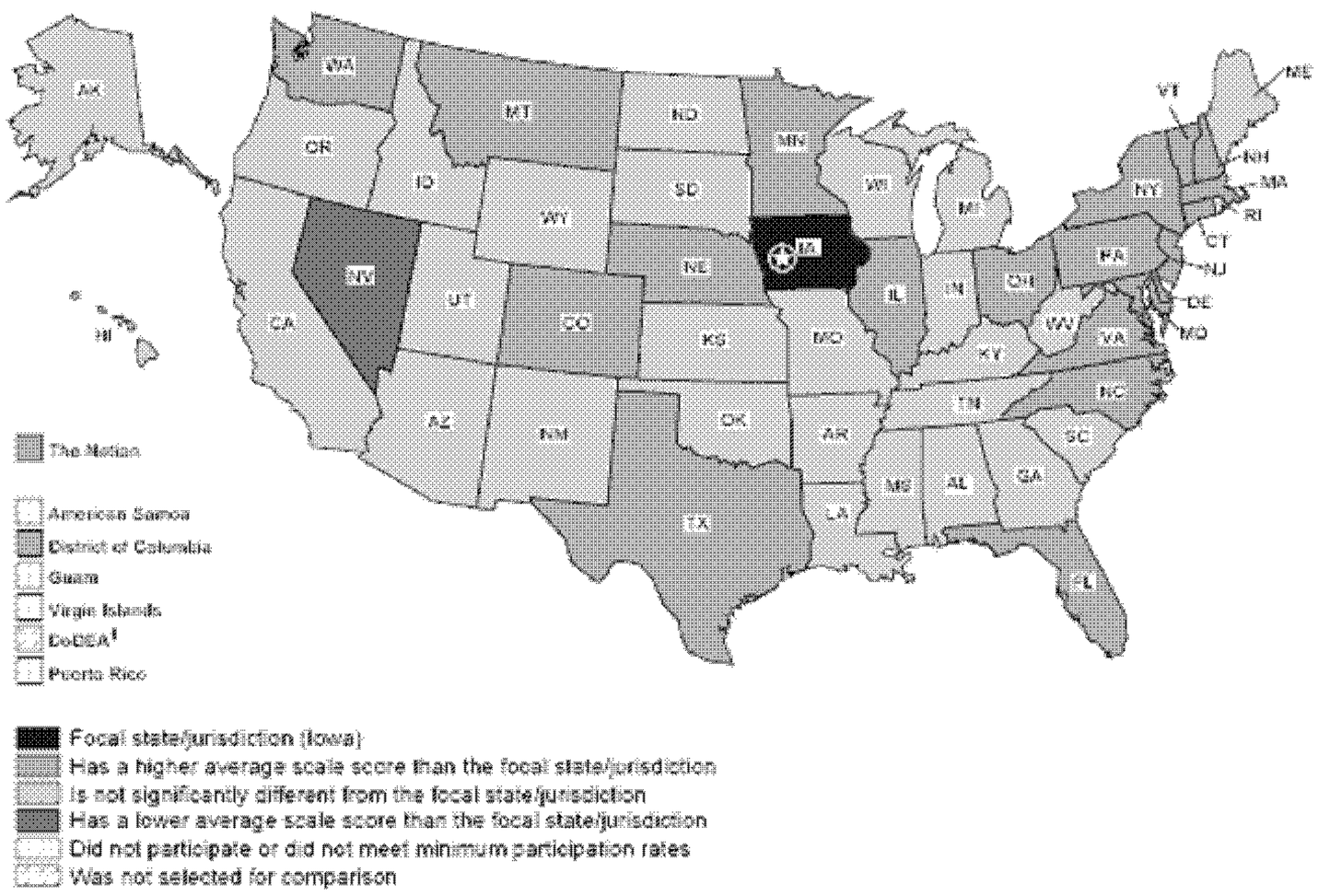
[1] Department of Defense Education Activity schools (domestic and overseas).
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 1992 Reading Assessments.

Figure 27A—2007 Iowa Grade 4 Reading White, Not Eligible for Free or Reduced Price Lunch - Not Special Education - Not English Language Learners: Standard Score 235 (National Public 238)



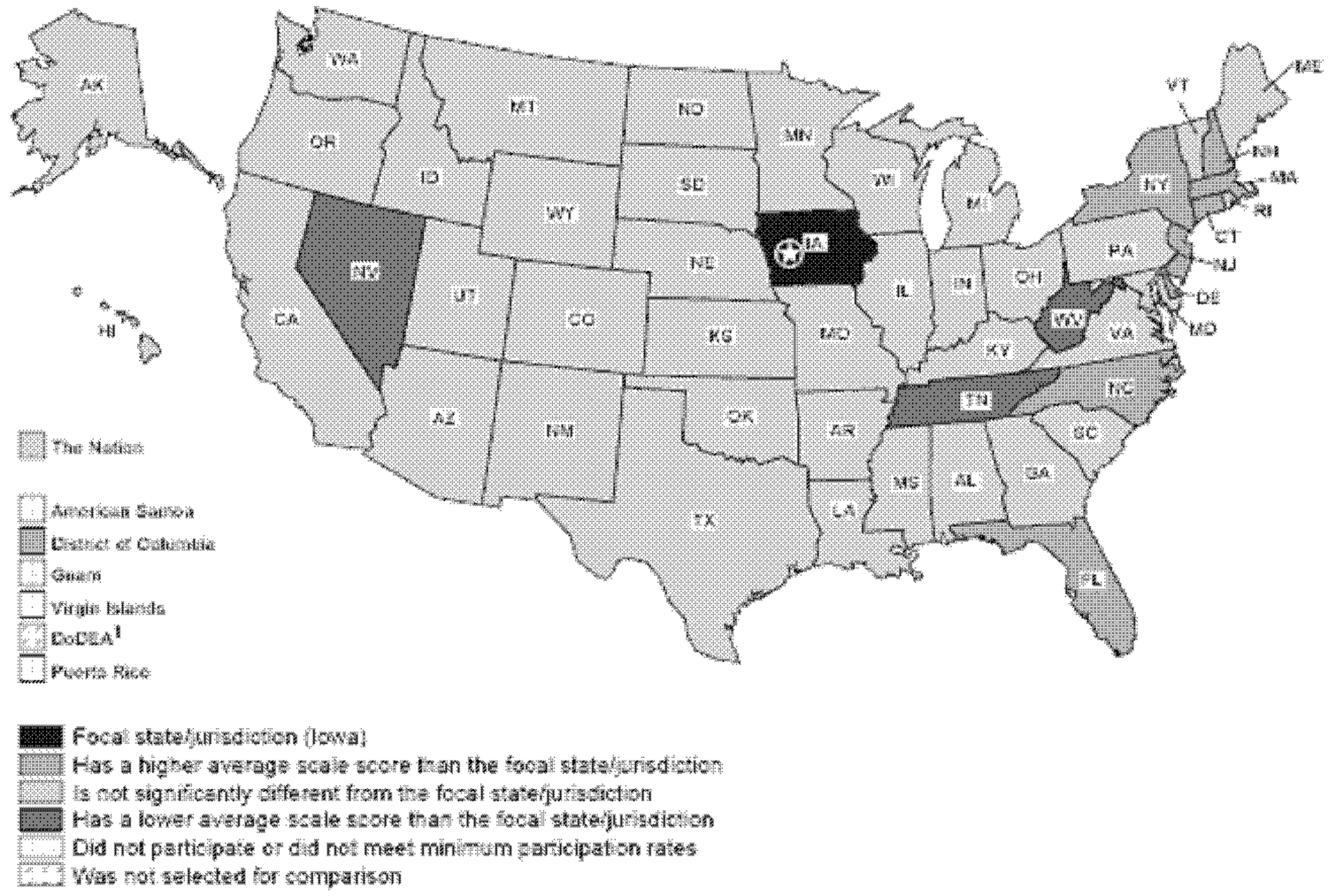
[1] Department of Defense Education Activity schools (domestic and overseas).
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2007 Reading Assessments.

Figure 28A—2005 Iowa Grade 4 Reading White, Not Eligible for Free or Reduced Price Lunch - Not Special Education - Not English Language Learners: Standard Score 231 (National Public 235)



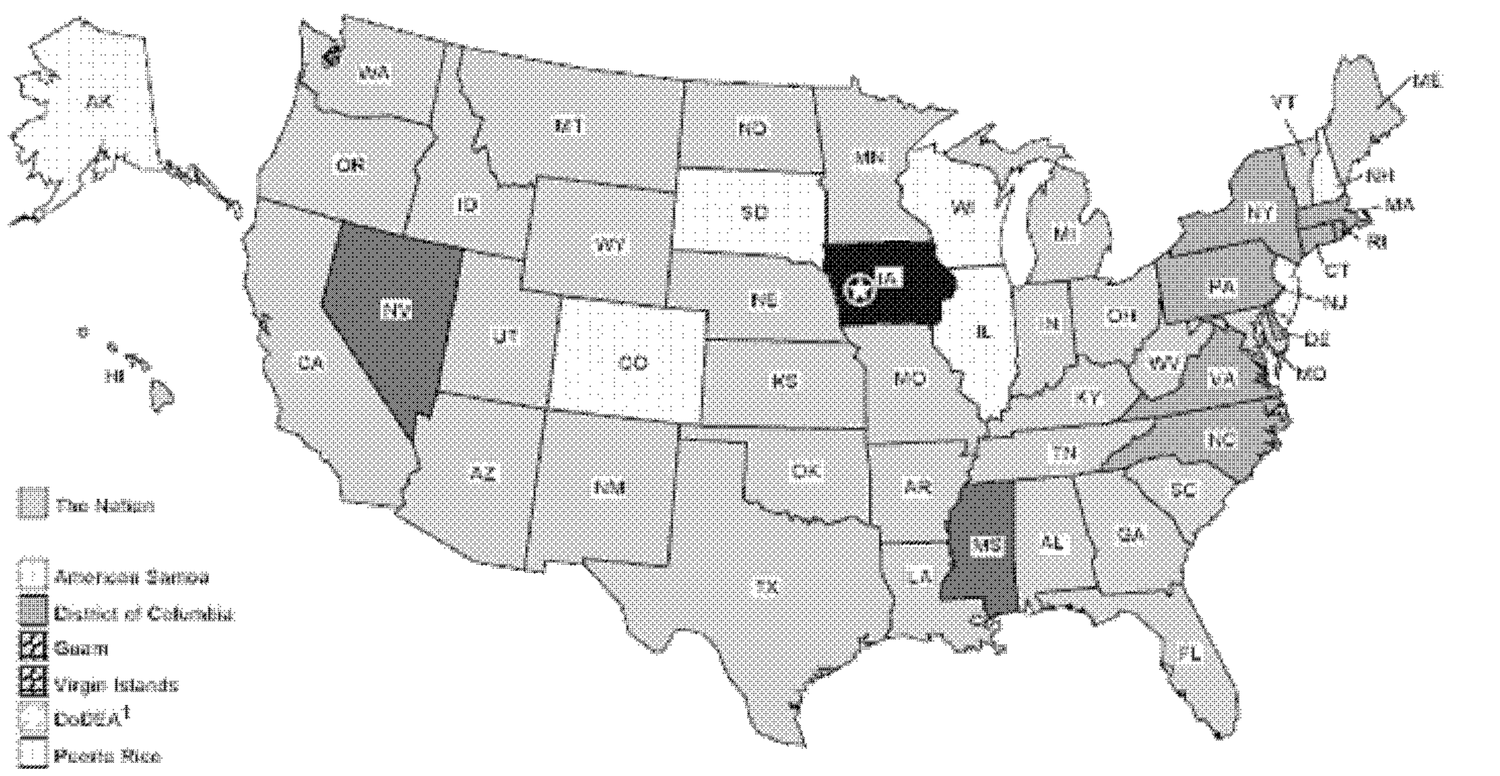
[1] Department of Defense Education Activity schools (domestic and overseas).
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2005 Reading Assessments.

Figure 29A—2003 Iowa Grade 4 Reading White, Not Eligible for Free or Reduced Price Lunch - Not Special Education - Not English Language Learners: Standard Score 234 (National Public 235)



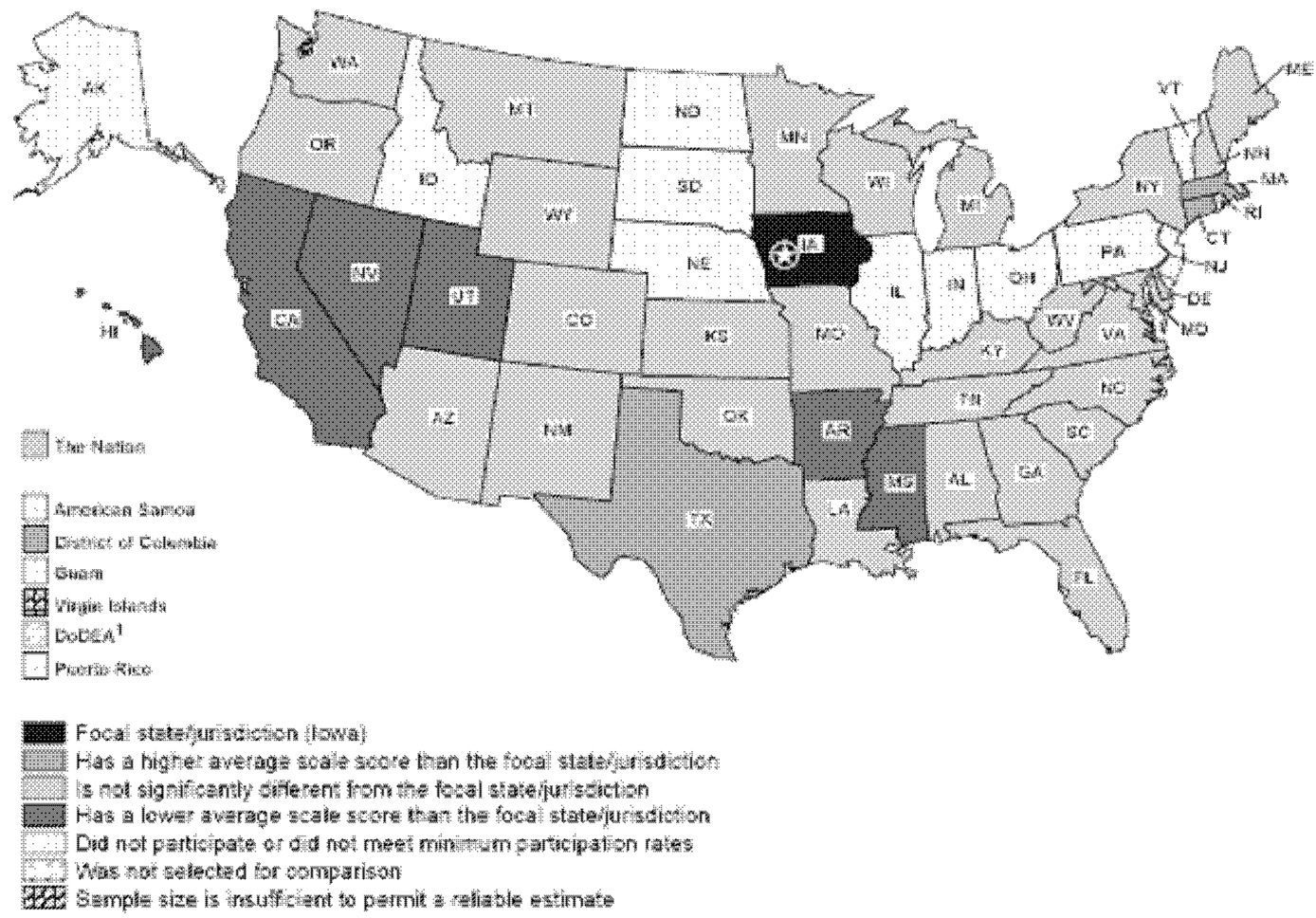
[1] Department of Defense Education Activity schools (domestic and overseas).
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2003 Reading Assessments.

Figure 30A—2002 Iowa Grade 4 Reading White, Not Eligible for Free or Reduced Price Lunch - Not Special Education - Not English Language Learners: Standard Score 232 (National Public 235)



[1] Department of Defense Education Activity schools (domestic and overseas).
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2002 Reading Assessments.

Figure 31A—1998 Iowa Grade 4 Reading White, Not Eligible for Free or Reduced Price Lunch - Not Special Education - Not English Language Learners: Standard Score 230 (National Public 230)



[1] Department of Defense Education Activity schools (domestic and overseas).
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 1998 Reading Assessments.

Figure 32A—Iowa Compared to the Nation: Grade 4 Mathematics

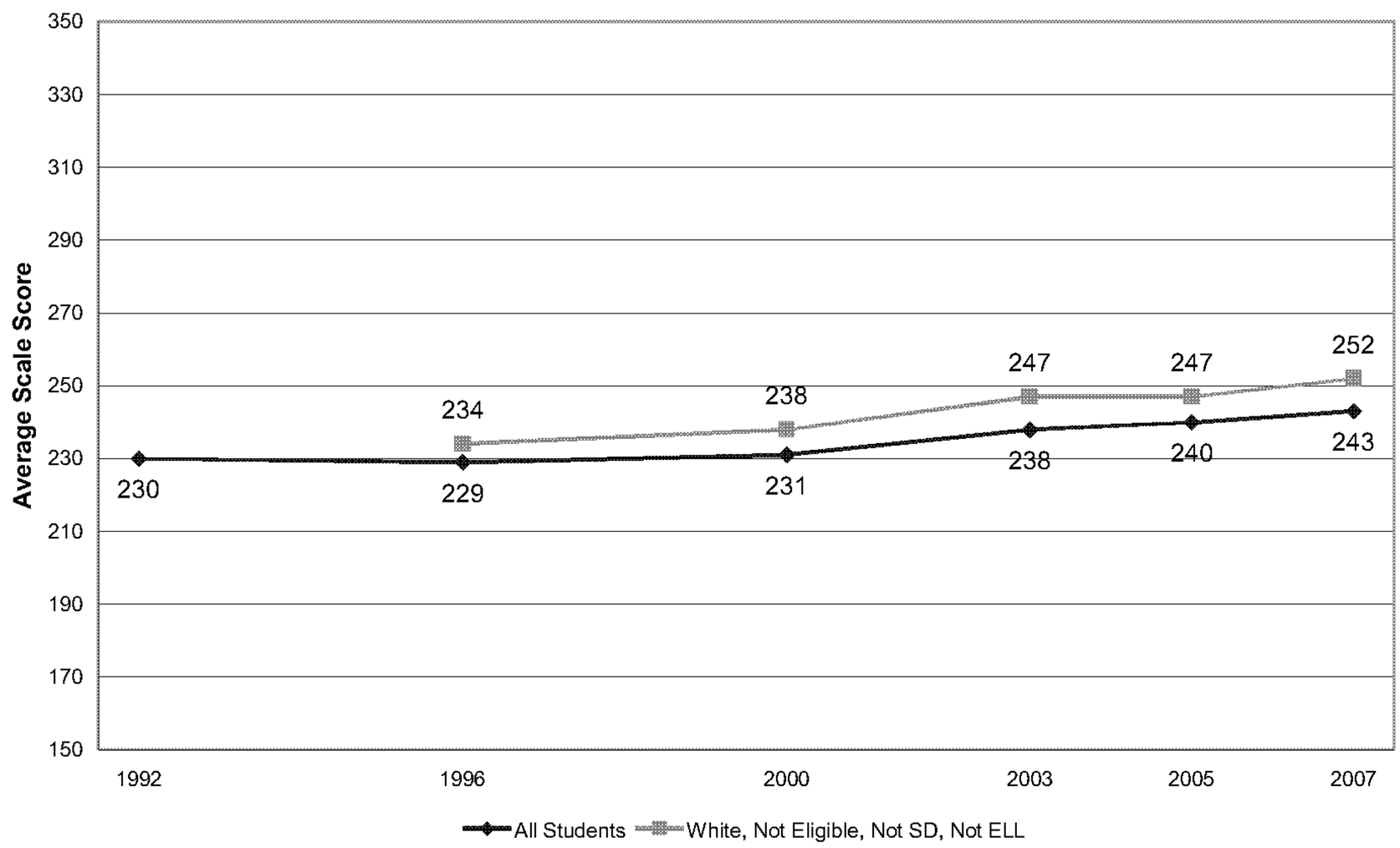
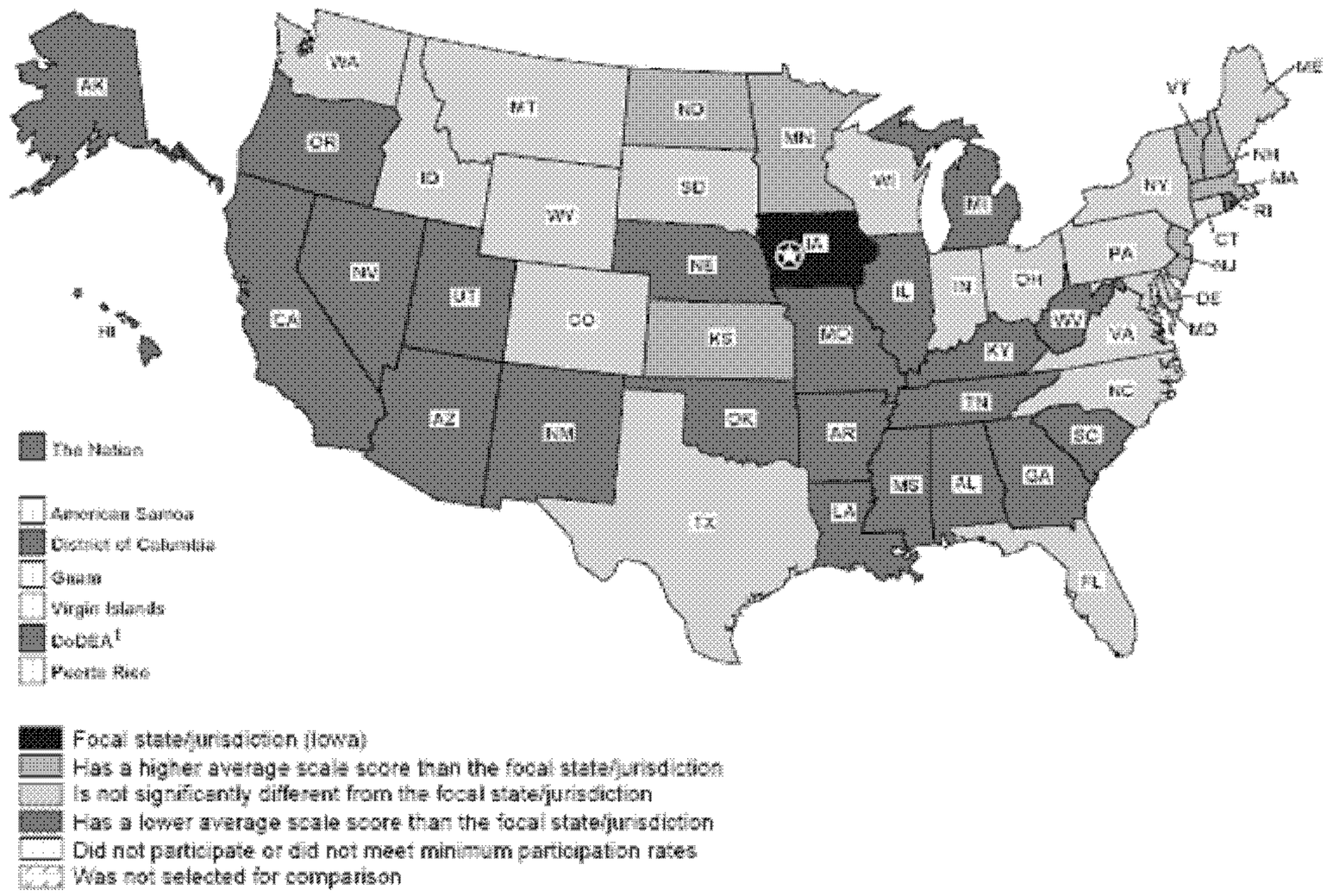
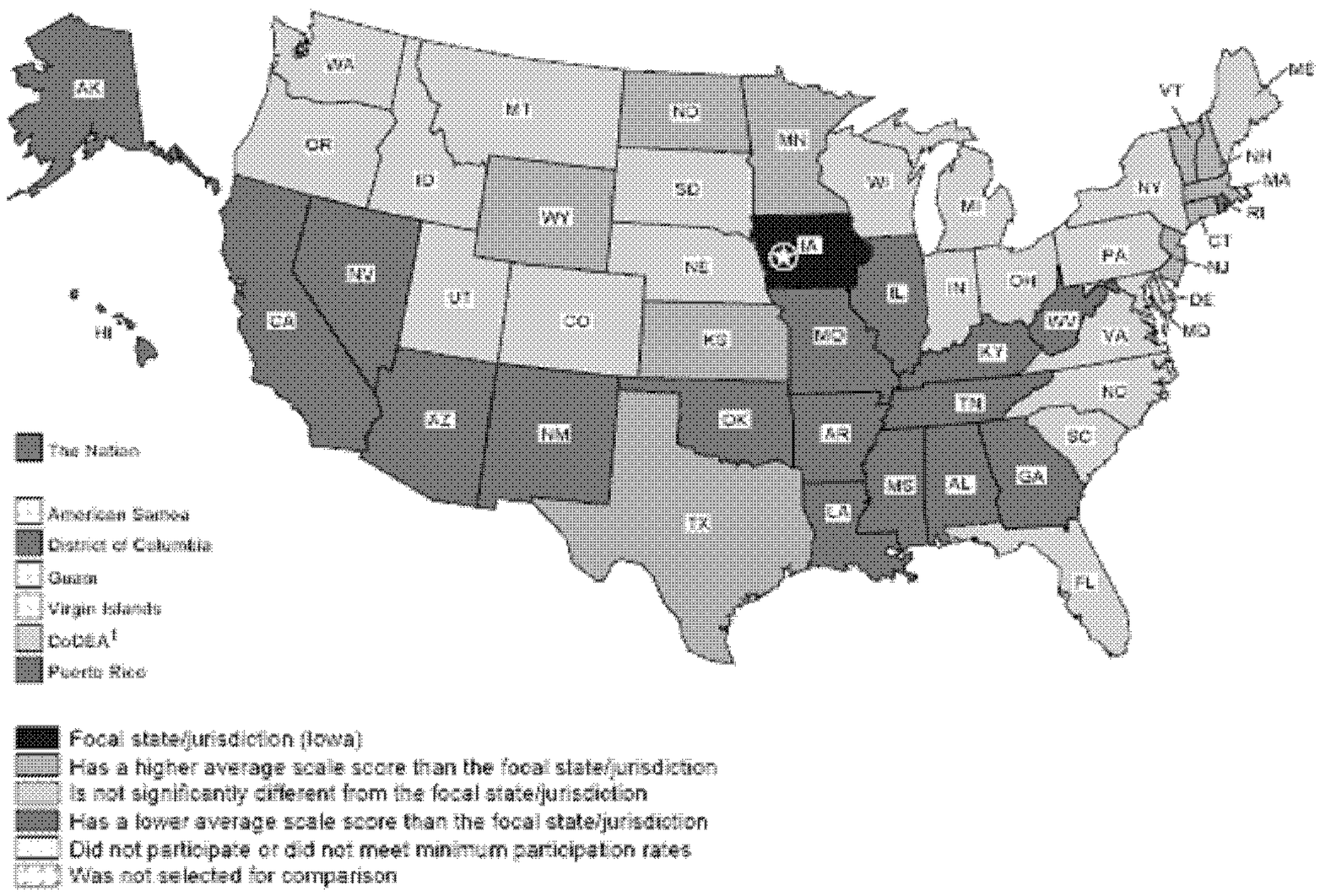


Figure 33A—2007 Iowa Grade 4 Mathematics All Students: Standard Score 243 (National Public 239)



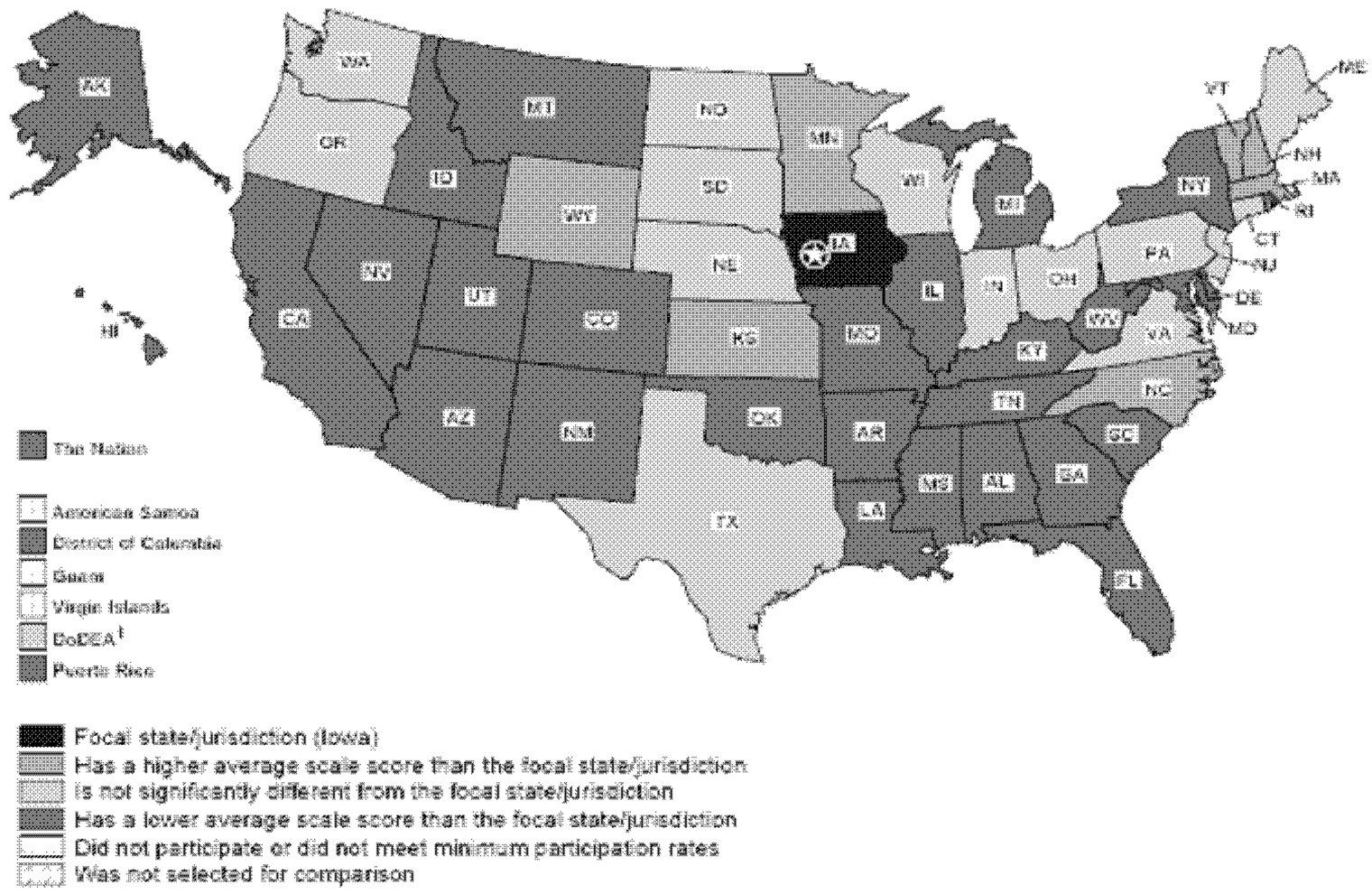
[1] Department of Defense Education Activity schools (domestic and overseas).
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2007 Mathematics Assessments.

Figure 34A—2005 Iowa Grade 4 Mathematics All Students: Standard Score 240 (National Public 237)



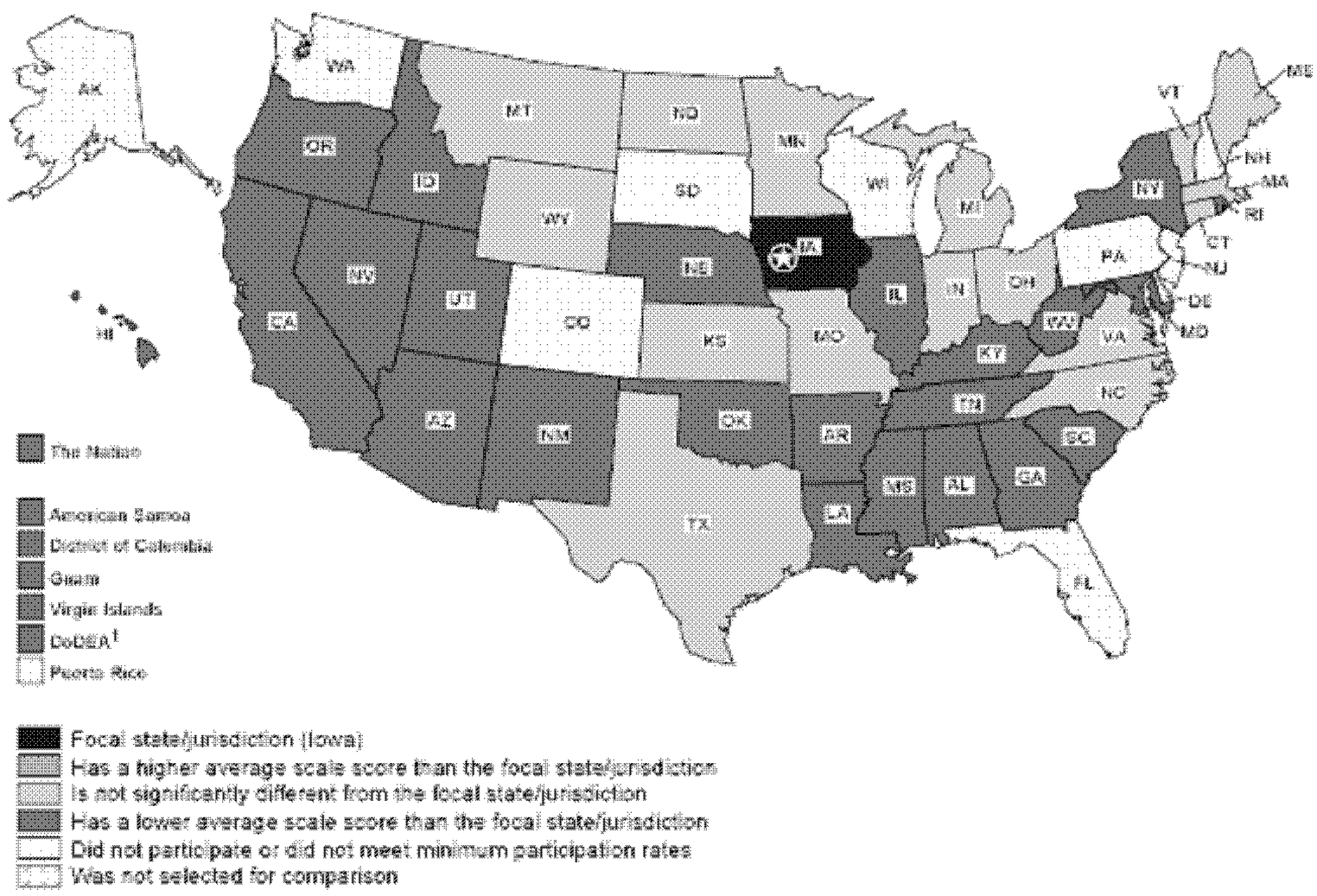
[1] Department of Defense Education Activity schools (domestic and overseas).
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2005 Mathematics Assessments.

Figure 35A—2003 Iowa Grade 4 Mathematics All Students: Standard Score 238 (National Public 234)



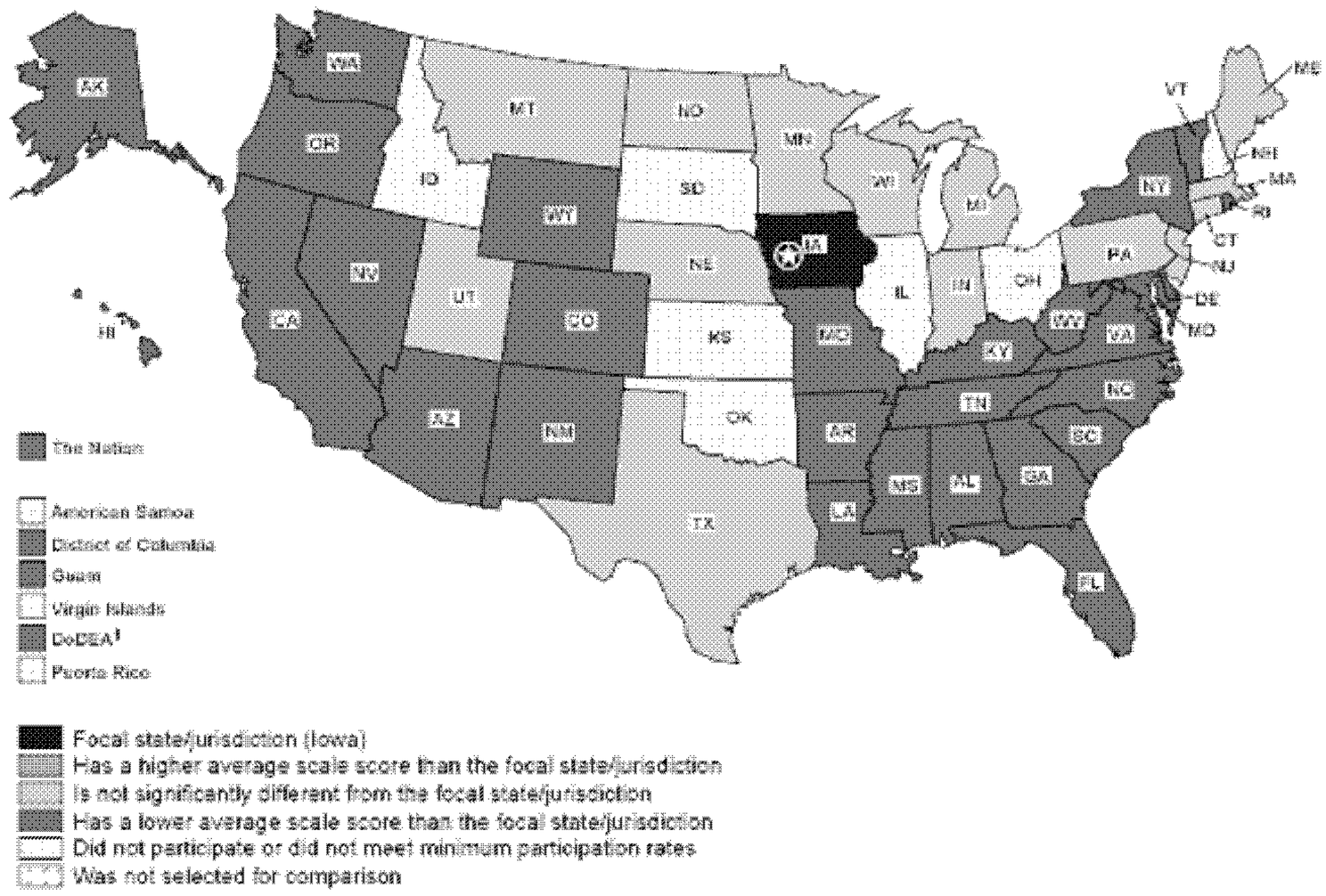
[1] Department of Defense Education Activity schools (domestic and overseas).
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2003 Mathematics Assessments.

Figure 36A—2000 Iowa Grade 4 Mathematics All Students: Standard Score 231 (National Public 224)



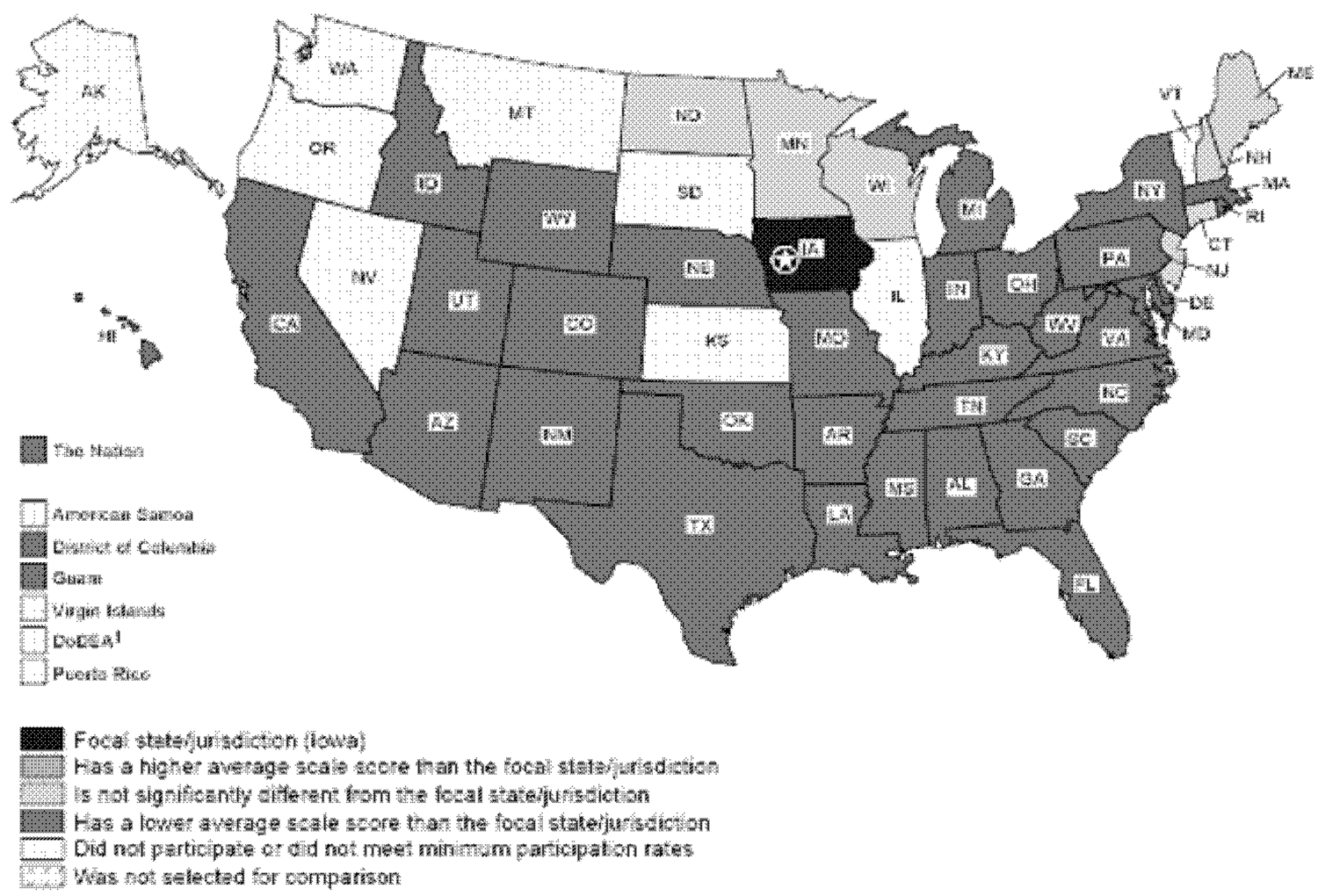
[1] Department of Defense Education Activity schools (domestic and overseas).
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2000 Mathematics Assessments.

Figure 37A—1996 Iowa Grade 4 Mathematics All Students: Standard Score 229 (National Public 222)



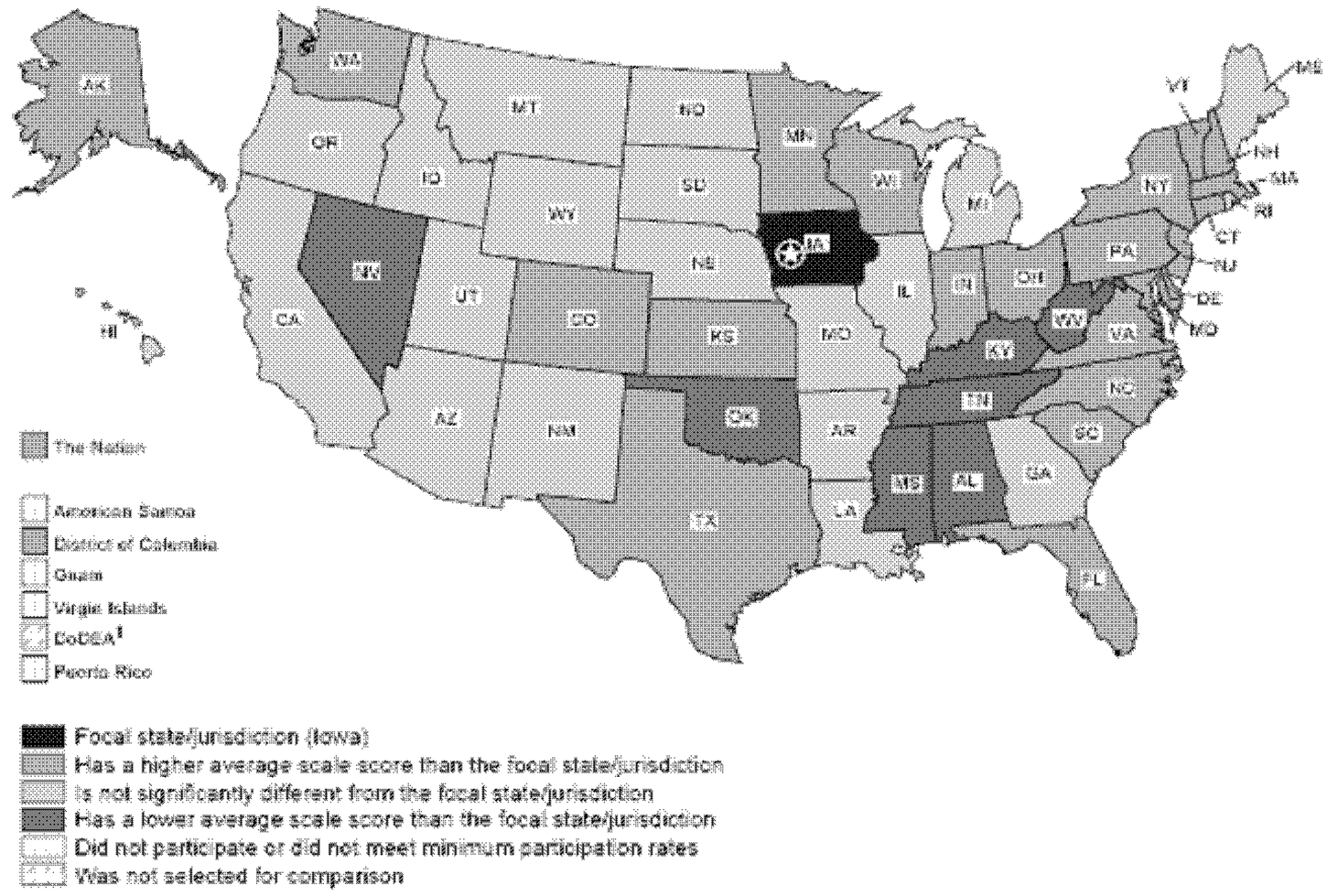
[1] Department of Defense Education Activity schools (domestic and overseas).
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 1996 Mathematics Assessments.

Figure 38A—1992 Iowa Grade 4 Mathematics All Students: Standard Score 230 (National Public 219)



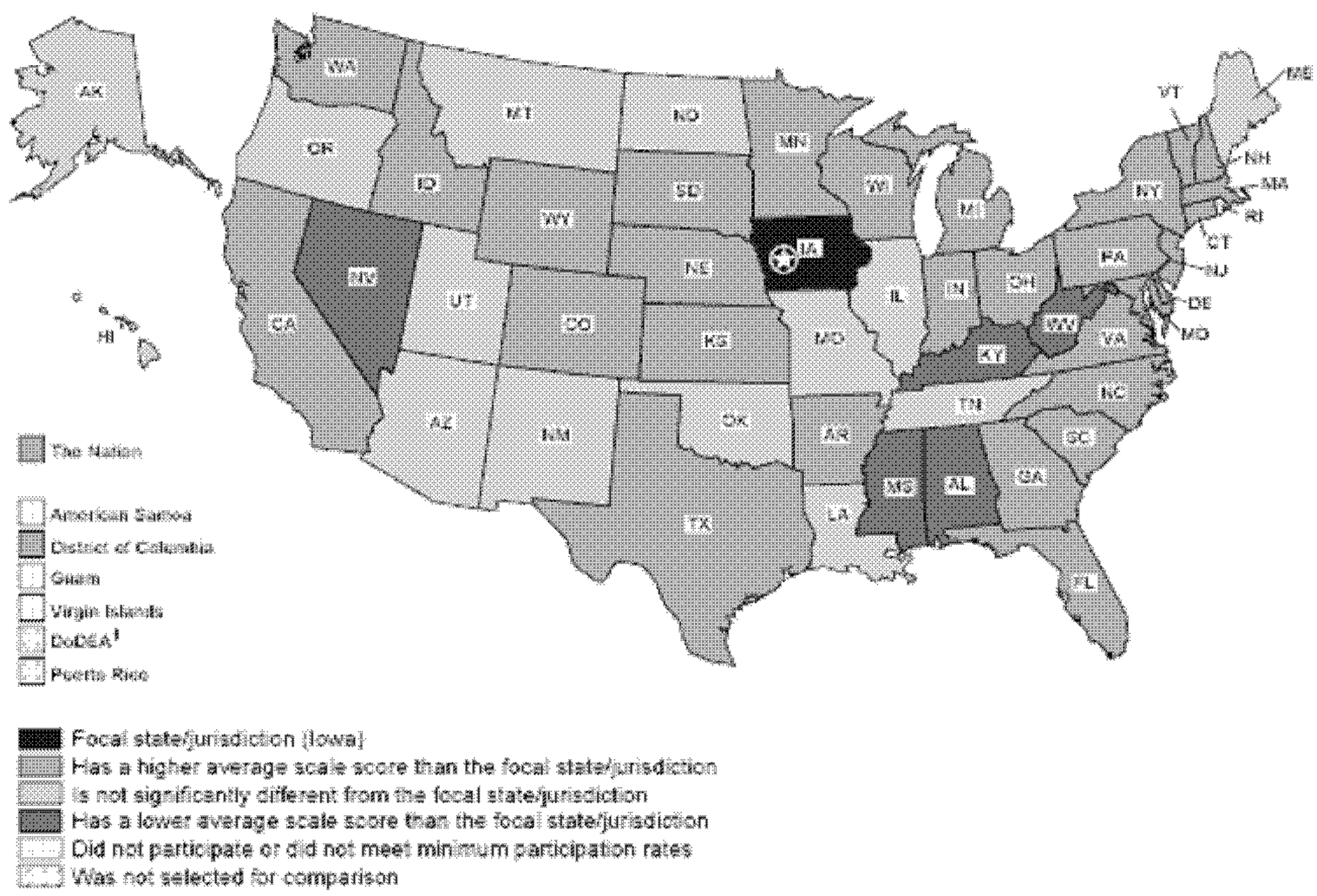
[1] Department of Defense Education Activity schools (domestic and overseas).
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 1992 Mathematics Assessments.

Figure 39A—2007 Iowa Grade 4 Mathematics White, Not Eligible for Free or Reduced Price Lunch - Not Special Education - Not English Language Learners: Standard Score 252 (National Public 254)



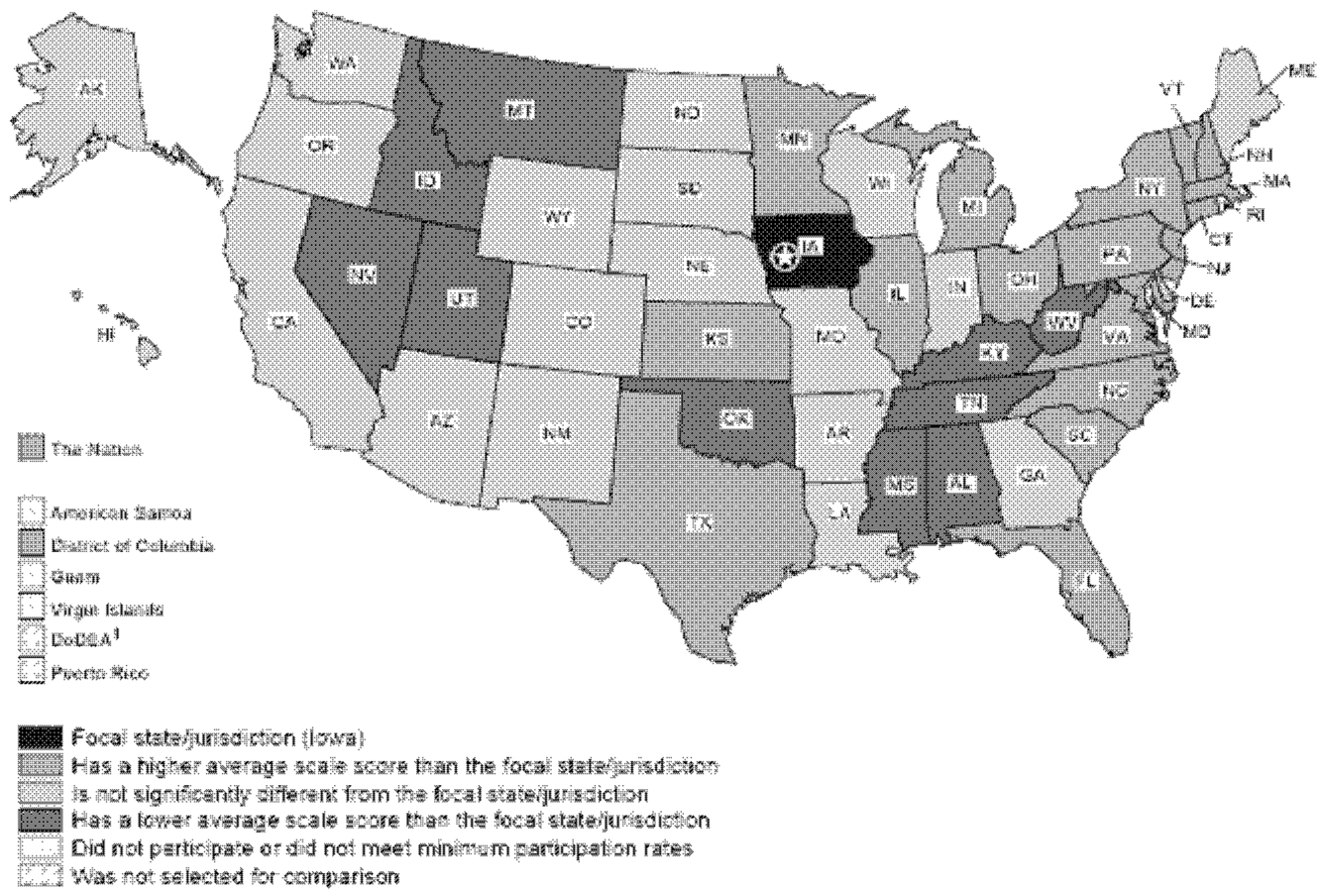
[1] Department of Defense Education Activity schools (domestic and overseas).
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2007 Mathematics Assessments.

Figure 40A—2005 Iowa Grade 4 Mathematics White, Not Eligible for Free or Reduced Price Lunch - Not Special Education - Not English Language Learners: Standard Score 247 (National Public 252)



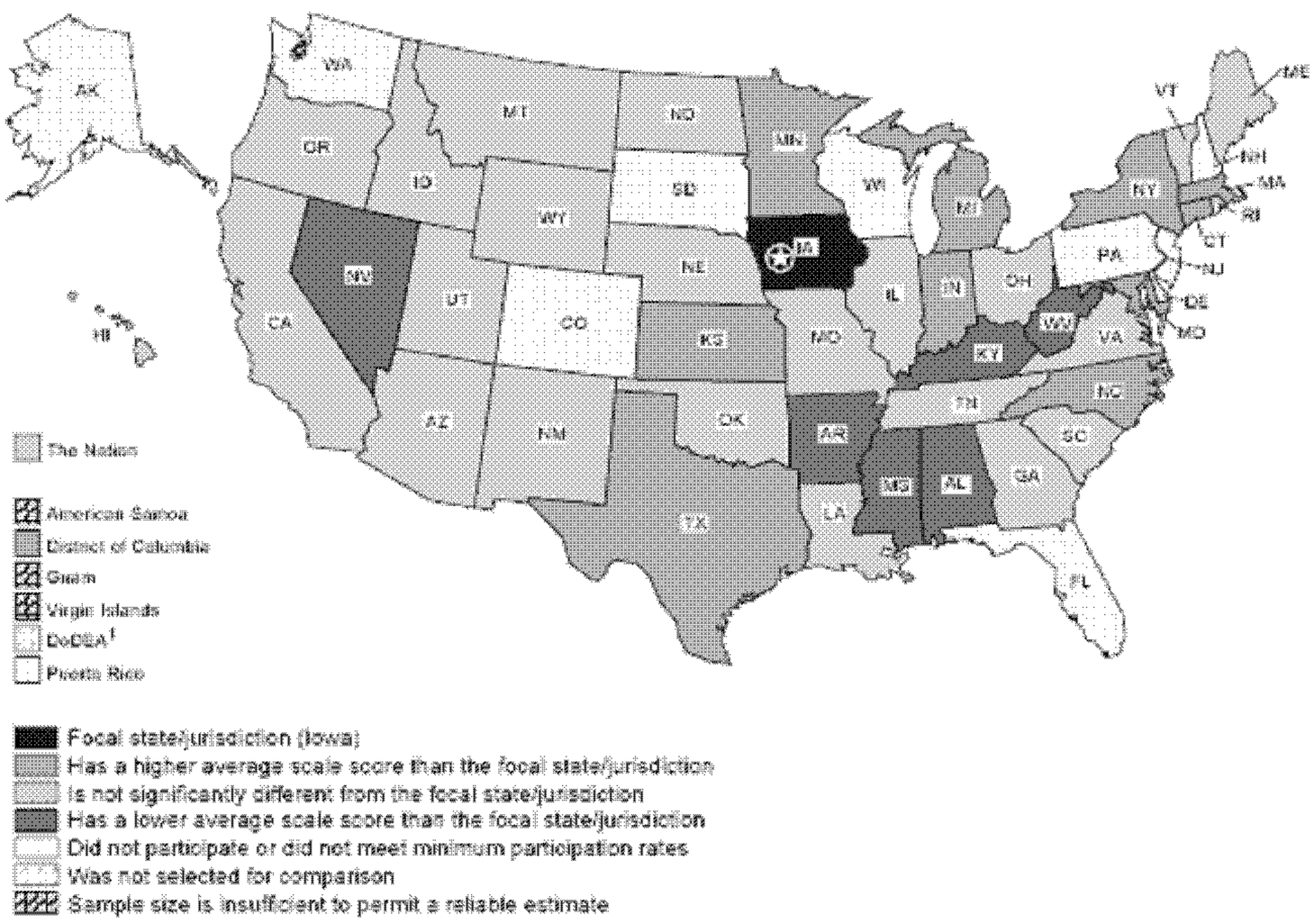
[1] Department of Defense Education Activity schools (domestic and overseas).
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2005 Mathematics Assessments.

Figure 41A—2003 Iowa Grade 4 Mathematics White, Not Eligible for Free or Reduced Price Lunch - Not Special Education - Not English Language Learners: Standard Score 247 (National Public 249)



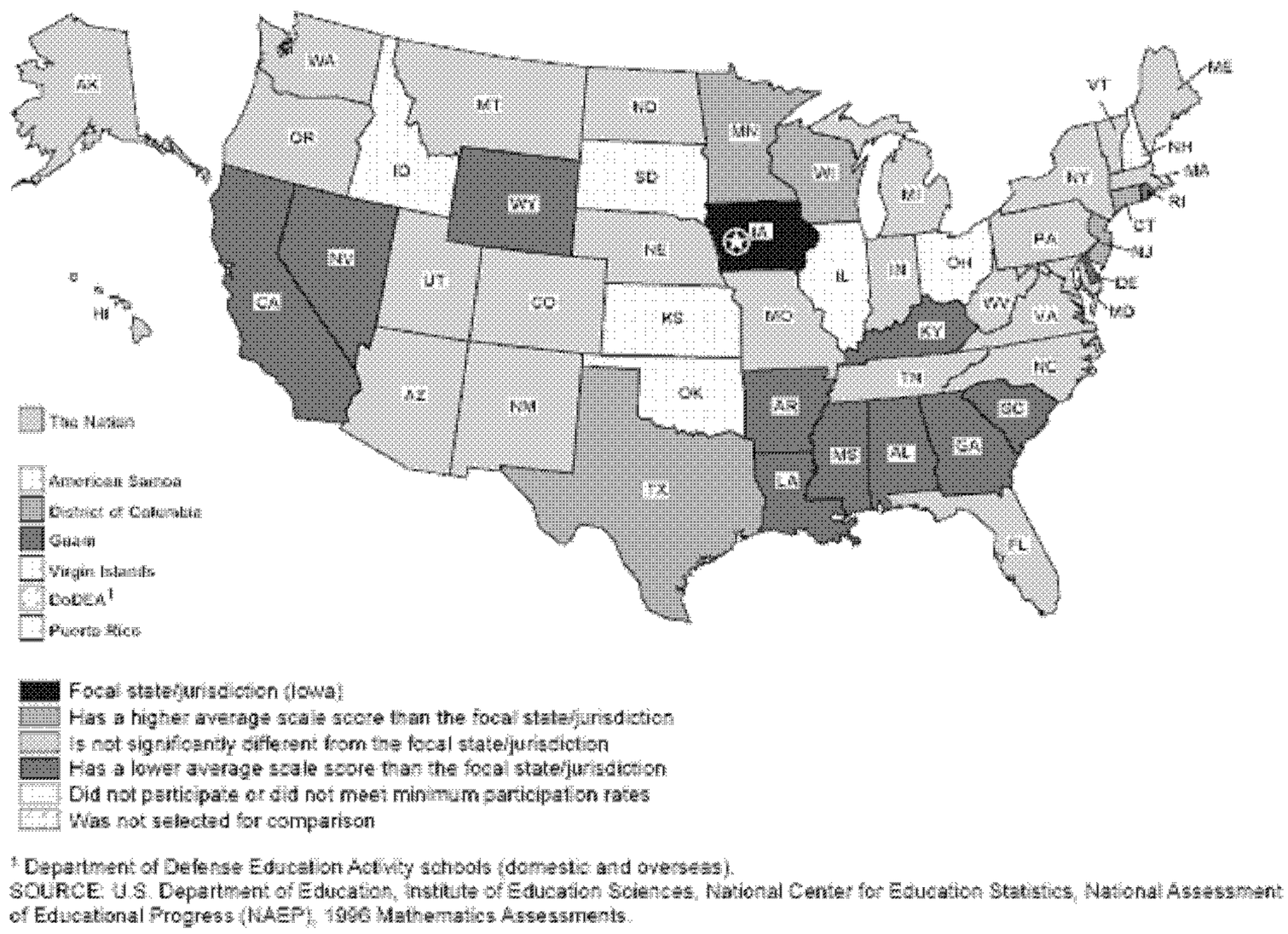
[1] Department of Defense Education Activity schools (domestic and overseas).
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2003 Mathematics Assessments.

Figure 42A—2000 Iowa Grade 4 Mathematics White, Not Eligible for Free or Reduced Price Lunch - Not Special Education - Not English Language Learners: Standard Score 238 (National Public 239)



[1] Department of Defense Education Activity schools (domestic and overseas).

Figure 43A—1996 Iowa Grade 4 Mathematics White, Not Eligible for Free or Reduced Price Lunch - Not Special Education - Not English Language Learners: Standard Score 234 (National Public 233).



[1] Department of Defense Education Activity schools (domestic and overseas).
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 1996 Mathematics Assessments.

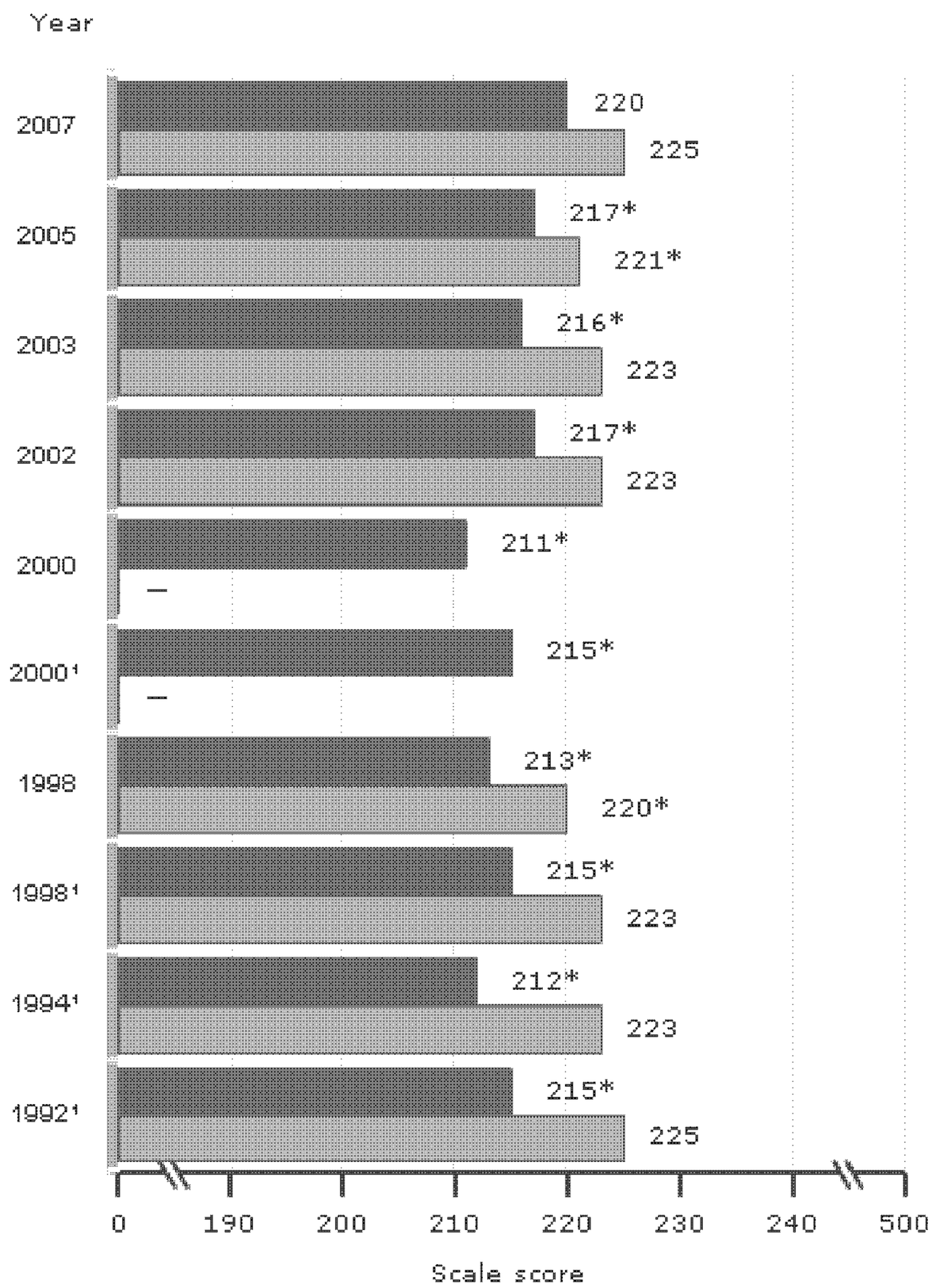
Note: In 1996, fewer Special Education and English Language Learner students were tested because accommodations were not allowed.
No United States map is available for 1996 Iowa White, Not Eligible for Free or Reduced Price Lunch - Not Special Education - Not English Language Learners.

Selected NAEP Achievement Charts for Iowa, 1990-2009

National Center for Education Statistics (NCES)

Institute of Education Sciences (IES)
National Assessment of Educational Progress (NAEP)
This report was generated using the State Profiles. http://nces.ed.gov/nationsreportcard/states/

Average scale scores for reading, grade 4, by year and jurisdiction for
All students [TOTAL]: 1992, 1994, 1998, 2000, 2002, 2003, 2005, and 2007
All students

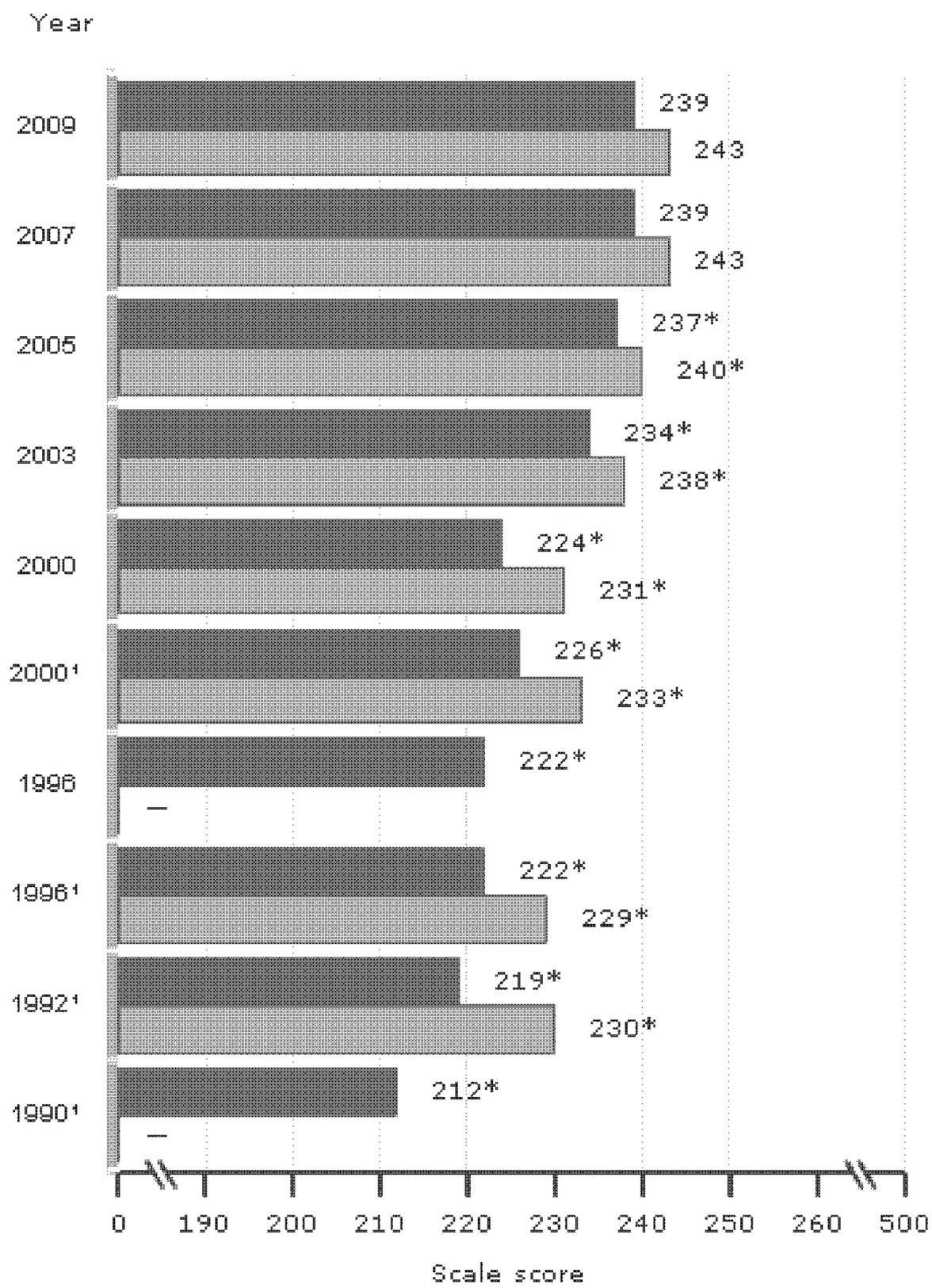


— Not available.
* Significantly different ($p < .05$) from 2007.
¹ Accommodations were not permitted for this assessment.
NOTE: The NAEP Reading scale ranges from 0 to 500. Some apparent differences between estimates may not be statistically significant.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 1992, 1994, 1998, 2000, 2002, 2003, 2005, and 2007 Reading Assessments.

National Center for Education Statistics (NCES)

Institute of Education Sciences (IES)
National Assessment of Educational Progress (NAEP)
This report was generated using the State Profiles. http://nces.ed.gov/nationsreportcard/states/

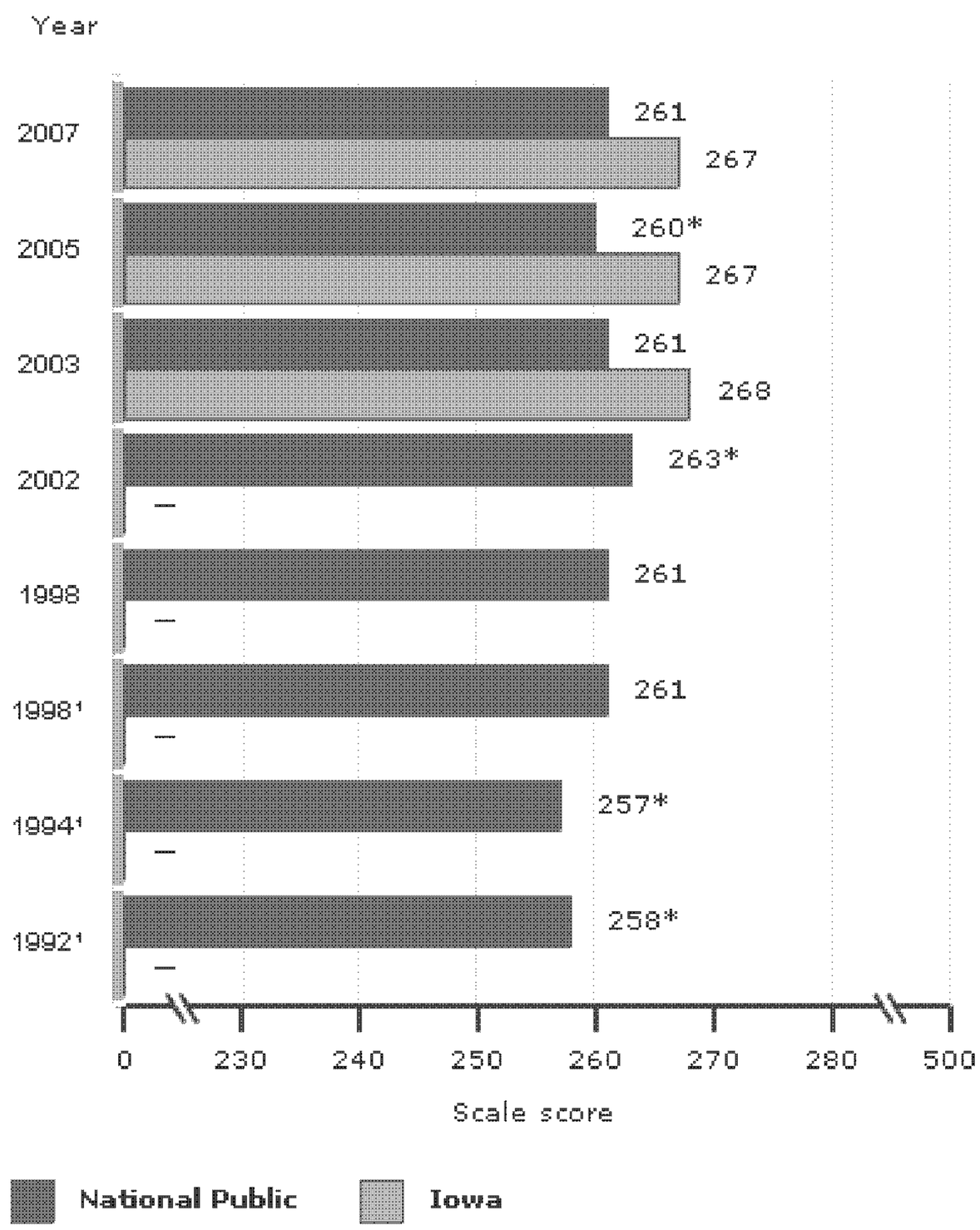
Average scale scores for mathematics, grade 4, by year and jurisdiction for All students [TOTAL]: 1990, 1992, 1996, 2000, 2003, 2005, 2007, and 2009
All students



— Not available.
* Significantly different ($p < .05$) from 2009.
¹ Accommodations were not permitted for this assessment.
NOTE: The NAEP Mathematics scale ranges from 0 to 500. Some apparent differences between estimates may not be statistically significant.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 1990, 1992, 1996, 2000, 2003, 2005, 2007, and 2009 Mathematics Assessments.

National Center for Education Statistics (NCES)
Institute of Education Sciences (IES)
National Assessment of Educational Progress (NAEP)
This report was generated using the State Profiles. http://nces.ed.gov/nationsreportcard/states/

Average scale scores for reading, grade 8, by year and jurisdiction for
All students [TOTAL]: 1992, 1994, 1998, 2002, 2003, 2005, and 2007
All students

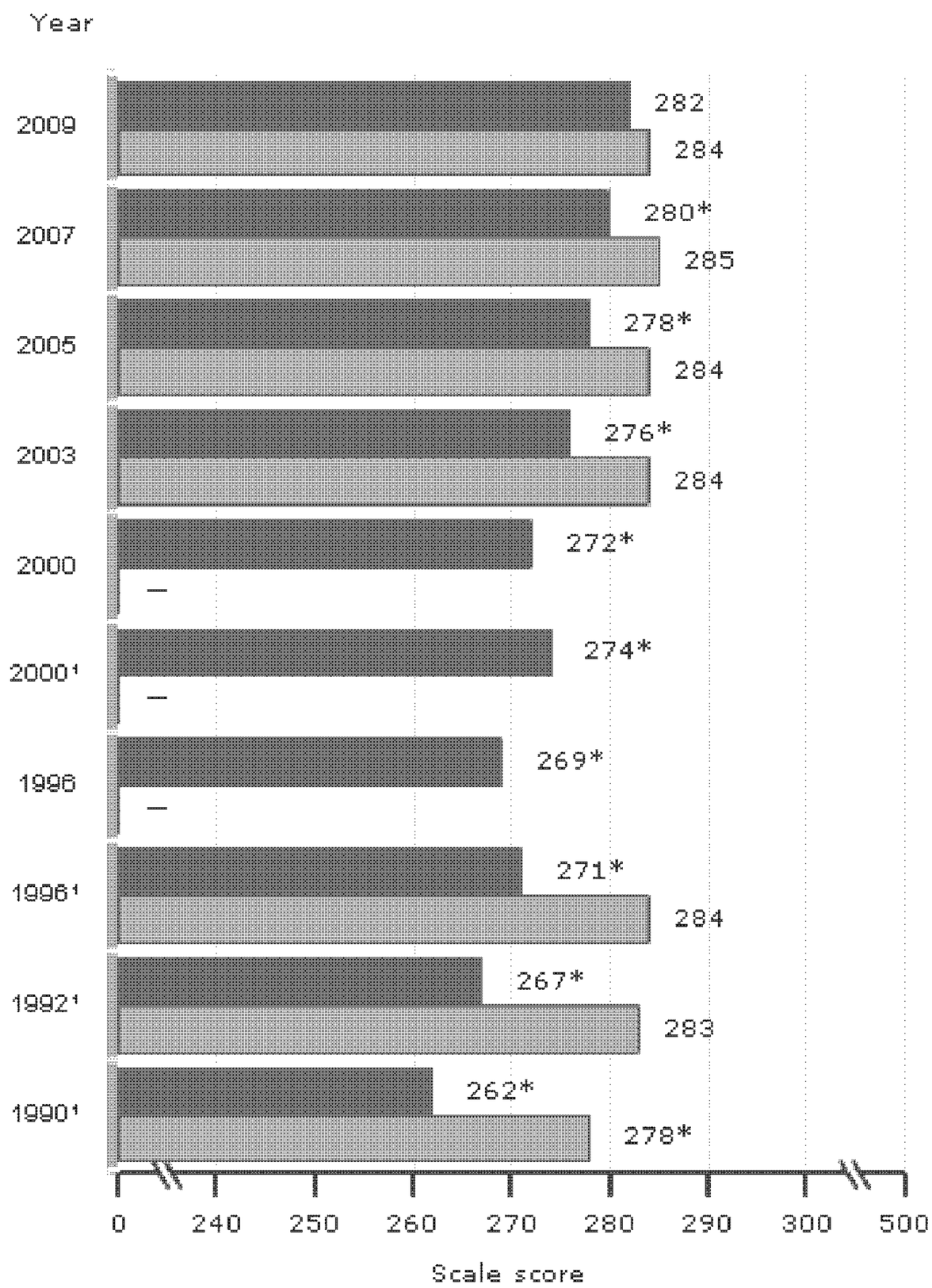


— Not available.
* Significantly different ($p < .05$) from 2007.
¹ Accommodations were not permitted for this assessment.
NOTE: The NAEP Reading scale ranges from 0 to 500. Some apparent differences between estimates may not be statistically significant.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 1992, 1994, 1998, 2002, 2003, 2005, and 2007 Reading Assessments.

National Center for Education Statistics (NCES)

Institute of Education Sciences (IES)
National Assessment of Educational Progress (NAEP)
This report was generated using the State Profiles. http://nces.ed.gov/nationsreportcard/states/

Average scale scores for mathematics, grade 8, by year and jurisdiction for
All students [TOTAL]: 1990, 1992, 1996, 2000, 2003, 2005, 2007, and 2009
All students



— Not available.
* Significantly different ($p < .05$) from 2009.
¹ Accommodations were not permitted for this assessment.
NOTE: The NAEP Mathematics scale ranges from 0 to 500. Some apparent differences between estimates may not be statistically significant.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 1990, 1992, 1996, 2000, 2003, 2005, 2007, and 2009 Mathematics Assessments.

IOWA's performance on NAEP by subgroups

4th Grade

Performance of NAEP Reporting Groups in Iowa: 2007						
Reporting groups	Percent of students	Average score	Percent below *Basic*	Percent of students at or above *Basic*	Percent of students at or above *Proficient*	Percent *Advanced*
Male	50	222 ↑	29 ↓	71 ↑	32	6
Female	50	228 ↑	23 ↓	77 ↑	40	9
White	86	227	24 ↓	76 ↑	38	8
Black	5	205	45	55	16	2
Hispanic	6	208	47	53	18	1
Asian/Pacific Islander	2	235	18	82	49	15
American Indian/Alaska Native	#	‡	‡	‡	‡	‡
Eligible for National School Lunch Program	32	212 ↑	40	60	22	2
Not eligible for National School Lunch Program	68	231 ↑	19 ↓	81 ↑	43	10

8th Grade

Performance of NAEP Reporting Groups in Iowa: 2007						
Reporting groups	Percent of students	Average score	Percent below *Basic*	Percent of students at or above *Basic*	Percent of students at or above *Proficient*	Percent *Advanced*
Male	52	263	23	77	30	1
Female	48	272	17	83	42	4
White	87	270	18	82	38	3
Black	5	247	42	58	17	1
Hispanic	6	250	39	61	16	1
Asian/Pacific Islander	2	‡	‡	‡	‡	‡
American Indian/Alaska Native	#	‡	‡	‡	‡	‡
Eligible for National School Lunch Program	31	253	35	65	22	1
Not eligible for National School Lunch Program	69	274	14	86	42	3

IOWA's performance on ESEA accountability measures by subgroups

				4TH GRADE READING											
BIENN.	WHITE	AF.AMER.	(+/-)	HISPANIC	(+/-)	ASIAN	(+/-)	AMER. IN	(+/-)	MALE	FEMALE	(+/-)	F&R - E	F&R - NE	(+/-)
2001-2003	78.6	48.4	**-30.2**	52.6	**-22**	75.5	**-3.1**	60.6	**-18**	73.7	78.1	**-4.4**	60.5	82.2	**-21.7**
2002-2004	79.5	50.2	-29.3	52.4	-27.1	77.4	-2.1	65.2	-14.3	74.4	70	**4.4**	61.4	83.3	-21.9
2003-2005	80.6	54.6	-26	54.7	-25.9	77.7	-2.9	67.7	-12.9	75.6	80.4	-5.4	63.6	84.4	-20.8
2004-2006	81.3	55.2	-26.1	58	-23.3	81.2	-0.1	64.2	-17.1	76.2	80.7	-4.5	64.9	84.7	-19.8
2005-2007	81.9	56.2	-25.7	59.9	-22	82	**0.1**	67.7	-14.2	76.8	81.2	-4.4	65.6	85.3	-19.7
2006-2008	81.9	56.1	-25.8	61.4	-20.5	80.4	-1.5	68.6	-13.3	77	81	-4	65.7	85.8	-20.1
2007-2009	82.2	56.3	**-25.9**	62.6	**-19.6**	80.9	**-1.3**	63.6	**-18.6**	77.2	81.3	**-4.1**	66.4	86.2	**-19.8**

				8TH GRADE READING											
BIENN.	WHITE	AF.AMER.	(+/-)	HISPANIC	(+/-)	ASIAN	(+/-)	AMER. IN	(+/-)	MALE	FEMALE	(+/-)	F&R - E	F&R - NE	(+/-)
2001-2003	72	35.9	**-36.1**	43	**-29**	68.6	**-3.4**	49.2	**-22.8**	66.5	72.2	**-5.7**	49.7	75.4	**-25.7**
2002-2004	72.1	36.6	-35.5	42	-30.1	69	-3.1	51.9	-20.2	67	72	-5	49.6	76.4	-26.9
2003-2005	73.4	41.6	-31.8	43.2	-30.2	70	-3.4	56.5	-16.9	68.1	73.1	-5	51.9	77.8	-25.9
2004-2006	74.1	44.1	-30	47	-27.1	70.9	-3.2	58.4	-15.7	68.9	73.8	-4.9	54.2	78.2	-24
2005-2007	75.2	44.4	-30.8	49	-26.2	74	-1.2	59.1	-16.1	70.2	74.2	-4	55	79.3	-24.3
2006-2008	75.7	44.2	-31.5	48.3	-27.4	74.3	-1.4	60.7	-15	70.7	74.3	-3.6	54.7	80.1	-25.4
2007-2009	76.2	45.2	**-31**	49.1	**-25.1**	74.3	**-1.9**	61.2	**-15**	70.6	75.1	**-4.5**	55.1	80.7	**-25.6**

				11TH GRADE READING											
BIENN.	WHITE	AF.AMER.	(+/-)	HISPANIC	(+/-)	ASIAN	(+/-)	AMER. IN	(+/-)	MALE	FEMALE	(+/-)	F&R - E	F&R - NE	(+/-)
2001-2003	78.6	49.7	**-28.9**	53.5	**-25.1**	75.1	**-3.5**	62.5		72.6	81.7	**-9.1**	60.8	79.9	**-19.1**
2002-2004	78.6	49.6	-29	51.2	-27.4	74.2	-4.4	61.9		72.2	81.6	-9.4	60.1	80.4	-20.3
2003-2005	78.7	51.4	-26.3	50.2	-28.5	75.8	-2.9	62.1		72.9	81.2	-8.3	60.1	80.9	-20.8
2004-2006	78.7	51.4	-26.3	52	-26.7	79.1	**0.4**	63.4		73.2	80.7	-7.5	60.1	81.2	-21.1
2005-2007	79.1	50.1	-29	53.2	-25.9	77.6	-1.5	66.4		73.6	80.6	-7	59.8	82	-22.2
2006-2008	79.1	50.1	-29	53.8	-25.3	75.5	-3.6	65.7		73.5	80.3	-6.8	59.6	81.9	-22.3
2007-2009	79.2	50.8	**-28.4**	55.9	**-23.3**	76.1	**-3.1**	59.6		73.5	80.2	**-6.7**	60.3	82.1	**-21.8**

				4TH GRADE MATH											
BIENN.	WHITE	AF.AMER.	(+/-)	HISPANIC	(+/-)	ASIAN	(+/-)	AMER.IN	(+/-)	MALE	FEMALE	(+/-)	F&R - E	F&R - NE	(+/-)
2001-2003	77.8	42.7	**-35.1**	53	**-24.8**	80	**2.2**	55.8	**-22**	75.9	74.2	**1.7**	59.4	81.3	**-21.9**
2002-2004	79.8	45.6	-34.2	55.7	-24.2	82	**2.2**	58.4	-21.4	77.6	76.2	**1.4**	62	83.2	-21.2
2003-2005	81.6	51.9	-29.7	58.4	-23.2	81.3	-0.3	63.6	-18	79.6	78	**1.6**	65.2	85.1	-19.9
2004-2006	82.7	55.5	-27.2	61.8	-20.9	83.5	**0.8**	62.2	-19.8	80.8	79.3	**1.5**	67.8	85.8	-18
2005-2007	83.4	56.6	-26.8	63.6	-19.8	84.3	**0.9**	63.6	-19.8	81.4	79.7	**1.7**	68.7	86.2	-17.5
2006-2008	83.5	55.9	-27.6	63.6	-19.9	84.1	**0.6**	65.6	-17.9	81.3	79.7	**1.6**	68.3	86.9	-16.6
2007-2009	83.4	54.6	**28.8**	63.1	**-20.3**	83.2	**-0.2**	61.5	**-21.9**	80.8	79.4	**1.4**	67.9	86.9	**-19**

				8TH GRADE MATH											
BIENN.	WHITE	AF.AMER.	(+/-)	HISPANIC	(+/-)	ASIAN	(+/-)	AMER. IN	(+/-)	MALE	FEMALE	(+/-)	F&R - E	F&R - NE	(+/-)
2001-2003	74.4	33	**-31.4**	42.9	**-31.5**	76.7	**2.3**	48.3	**-26.1**	71.2	71.6	**-0.6**	50.9	78	**-27.1**
2002-2004	75.3	34.1	-31.2	42.8	-32.5	77.5	**2.2**	51.1	-24.2	72	72.3	-0.3	51.8	79.4	-27.6
2003-2005	76.5	38.9	-37.6	46	-30.5	76.9	**0.4**	54.8	-21.7	73.5	73.9	-0.4	54.7	80.8	-26.1
2004-2006	77.6	41.8	-35.8	51.8	-25.8	79	**1.4**	57.3	-20.3	74.7	74.7	0	57.6	81.4	-23.8
2005-2007	78.6	42.4	-36.2	53.6	-25	81.7	**3.1**	58.9	-19.7	76	75.1	**0.9**	58.5	82.5	-24
2006-2008	79.1	44	-35.1	53.7	-25.4	81.3	**2.2**	59.5	-19.6	76.1	75.6	**0.5**	58.6	83.1	-24.5
2007-2009	79.4	44.5	**-34.9**	54.6	**-24.8**	80.8	**1.4**	59.7	**-19.7**	76.2	75.7	**0.5**	59.1	83.5	**-24.4**

				11TH GRADE MATH											
BIENN.	WHITE	AF.AMER.	(+/-)	HISPANIC	(+/-)	ASIAN	(+/-)	AMER. IN	(+/-)	MALE	FEMALE	(+/-)	F&R - E	F&R - NE	(+/-)
2001-2003	81.1	43.8	**-37.3**	52.8	**-28.3**	78.6	**-2.5**	61.3		79.5	78.9	**0.6**	62.4	82.2	**-19.8**
2002-2004	80.5	44	-36.5	51.6	-28.9	78.8	-1.7	59.5		78.6	78.4	**0.2**	61.5	82	-20.5
2003-2005	80.6	45.4	-35.2	51.8	-28.8	78.8	-1.8	61.6		78.9	78	**0.9**	61.4	82.5	-21.1
2004-2006	80.7	46.8	-33.9	54.4	-26.3	80	-0.7	60.4		78.9	78	**0.9**	61.3	82.9	-21.6
2005-2007	80.6	46.3	-34.3	55.2	-25.4	79.3	-1.3	61.1		78.9	77.7	**1.2**	60.8	83.2	-22.4
2006-2008	80.6	44.7	-35.9	54.3	-26.3	77.7	-2.9	63.1		78.8	77.3	**1.5**	60.4	83.3	-22.9
2007-2009	80.2	44.8	**-35.4**	55	**-25.2**	77.6	**-2.6**	61		78.2	76.5	**1.7**	60	83	**-23**

Learning Supports in Iowa

Iowa leaders have come to recognize that meeting the challenge of enhancing achievement test scores requires not only improving teaching but also necessitates developing better ways for schools, families, and communities to facilitate learning by alleviating *barriers,* both external and internal, that can interfere with learning and teaching.

In 2003, the Department of Education established a design team, engaged national consultants and a national advisory panel, and created a stakeholder group and several workgroups to develop guiding intervention and infrastructure frameworks for Iowa's *system* of learning supports. The charge was to design a system of learning supports that is fully integrated with efforts to improve instruction and that is fully embedded into the Iowa school improvement process.

In the fall of 2004, the design for a System of Learning Supports was finalized. The design document is titled "Developing Our Youth: Fulfilling a Promise, Investing in Iowa's Future—Enhancing Iowa's Systems of Supports for Learning and Development." It has been disseminated to policy makers and leaders at state, regional, and local levels within and outside the education system who have a compelling interest in the achievement of all students and are seeking effective ways to improve student learning. The document calls for rethinking the directions for student supports in order to reduce fragmentation in the system and increase the effectiveness and efficiency by which it operates. The intended results are for all children and youth to succeed in school, grow up healthy and socially competent, and be prepared for productive adulthood. To accomplish this, state policy emphasizes that schools and communities must work together and with their regional and state level partners and that schools and school districts need to address all aspects of students' learning, social-emotional development, and physical development.

The prototype design addresses the following:

- *Long-term results and measures* based on available data serve as leading indicators of student success in school. Additional sets of system and student performance measures reflect the intermediate and direct impact of a system of learning supports.
- *Cohesive intervention frameworks,* grounded in the agreed upon results for all children and youth in Iowa, facilitate organization of school and community resources, programs, and services into a comprehensive continuum that supports student learning and healthy development and addresses
- *Infrastructure* organizes the functions and processes needed to implement a system of learning supports and connect the various system levels (local, regional, and state). The infrastructure focus is on mechanisms that permit schools and communities to make optimal use of their resources, reframe the roles of personnel, and integrate the instruction, management, and learning supports components of the educational system.
- *Supportive policies* at all levels are identified or developed to facilitate the implementation of a system of learning supports in ways that complement and are fully integrated into school-community efforts to improve teaching and learning and manage resources.
- *Capacity building* at all system levels (state, regional, and local) will (a) ensure use of definitions and guidelines that create a common language for improved communication within the educational system and with other child-serving systems and (b) enhance the knowledge, skills, and resources and tools needed to successfully implement a system of learning supports.
- *Revamp* district, school, and school-community infrastructures to weave resources together to enhance and evolve the learning supports system.

- *Pursue* school improvement and systemic change from the perspective of learning supports and the need to engage and reengage students in classroom learning.

Current Initiative

Learning Supports are the wide range of strategies, programs, services, and practices that are implemented to create conditions that promote student learning in the Iowa Core Curriculum, healthy development, and success in school and life. Building on nationwide efforts led by the UCLA School Mental Health Project, Iowa has defined six content areas: (1) Supports for Instruction, (2) Family Support and Involvement, (3) Community Partnerships, (4) Safe, Healthy, and Caring Learning Environments, (5) Child and Youth Engagement, and (6) Supports for Transition.

Learning supports is a systems approach using a continuous improvement model to enhance a continuum of integrated supports for learning in the six content areas. This continuum of integrated learning supports aligns with IDM to:

- promote **core** learning and healthy development for *all* students,
- be proactive in preventing problems and serve as early interventions and **supplemental** support for *targeted groups* of students,
- provide **intensive** and highly *individualized* supports for some students.

Outcomes

As a systems approach to change, the long-term goal for Learning Supports is to increase capacity at the LEA, AEA, and SEA levels to:

Develop, implement, and sustain a continuum of integrated supports for learning in the six content areas.

In order to achieve this goal, Learning Supports will be focused on these outcomes for 2009–10:

1) 58–70 schools participate in statewide Learning Supports training and support provided by SEA/AEA
2) Districts engaged in the Core Curriculum complete the Self-Study and develop a plan for achieving Outcome 2 of the Iowa Core Curriculum: Community members and other supporting agencies work together to support the implementation of the Iowa Core Curriculum.
3) Consistent delivery of Learning Supports training.

In addition, specific student outcomes align with the broad statewide result areas established by the Iowa Collaboration for Youth Development[1] (ICYD):

- All Iowa youth are successful in school
- All Iowa youth are healthy and socially competent
- All Iowa youth are prepared for productive adulthood
- All Iowa youth are in safe and supportive schools, families, and communities

Essential Elements

Engagement in a continuous improvement process that includes: (1) analysis of academic, social, emotional, and behavioral data to identify areas of strength and weakness, (2) continuum/resource mapping (3) identification of quality supports (4) matching supports with needs, (5) community partnerships, and (6) monitoring and evaluation of supports. In addition, the system must have an **infrastructure** to ensure integrated coordination and planning, **supportive policies** that are student and family friendly, and the **capacity** to sustain learning supports.

[1] The Iowa Collaboration for Youth Development is a state mandated interagency partnership designed to better align policies and programs for the purpose of facilitating cooperative efforts among multiple state agencies on youth-related issues.

Professional Development

The SEA and AEA will partner to develop the training that covers the Essential Elements. LEAs will participate in six professional development opportunities. Where possible, training will be embedded with other social, emotional, behavioral initiative such as Positive Behavior Supports, Olweus, and Character Education. An implementation manual, communication tools, Content Network and searchable database of support will be developed by the SEA in partnership with AEAs and the statewide Learning Supports Advisory Team.

Current Implementation

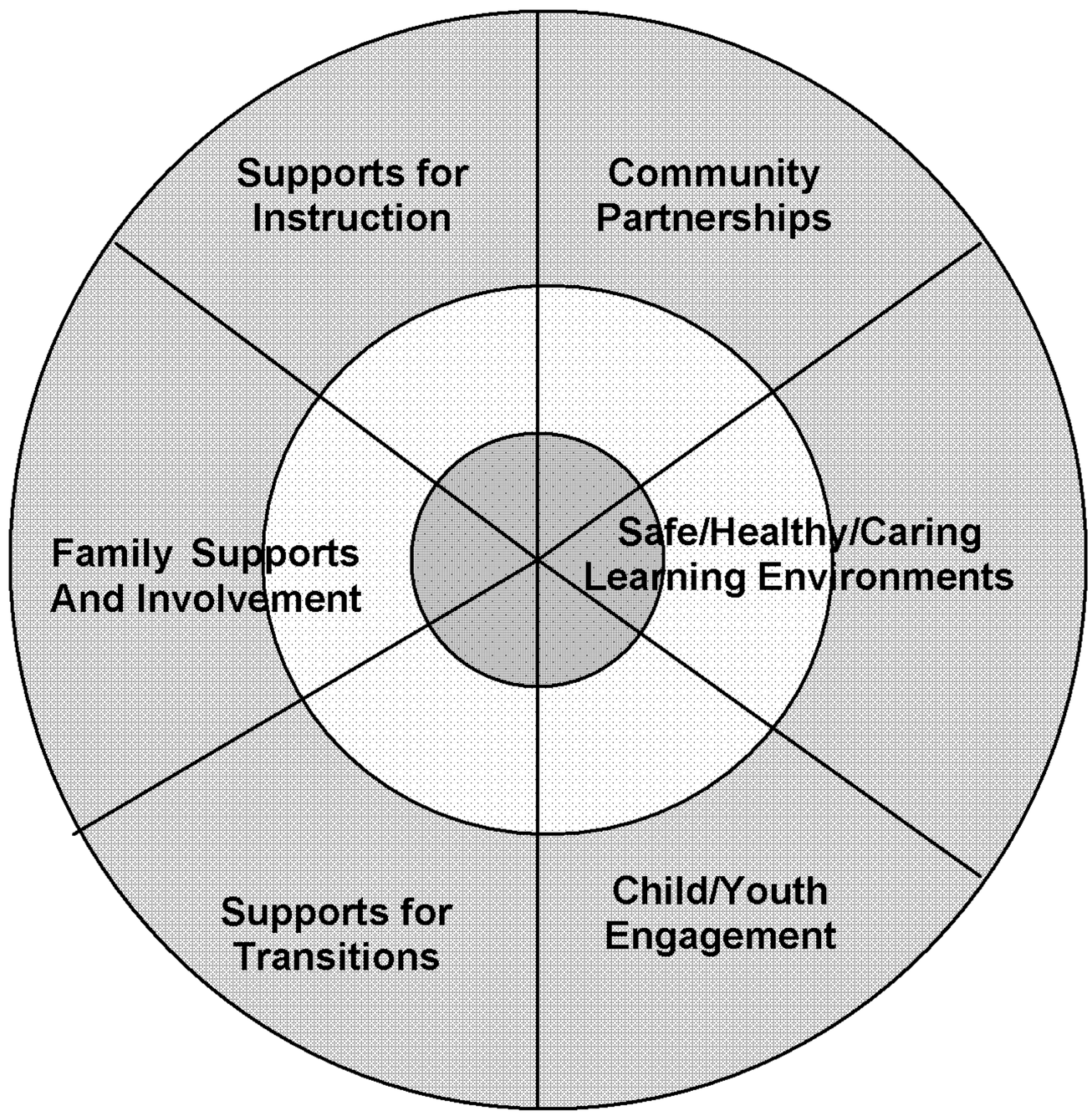
AEA staff dedicated to Learning Supports, LEA planning for Outcome 2 of the Iowa Core Curriculum, and consistent delivery of learning supports professional development are new activities for 2009–10.

RESULTS

Baseline data will be collected for participating schools in 2009–10. Trend line data are available for all ICYD result areas.

Learning Supports

Enhancing a continuum of integrated supports for learning in order to promote (1) student learning in the Iowa Core Curriculum, (2) healthy development, and (3) success in school and in life.



Learning Supports are the wide range of strategies, programs, services, and practices that are implemented to create conditions that enhance student learning. Learning supports:

- [redacted]
- [redacted]
- [redacted]

http://www.iowa.gov/educate/index.php?option=com_content&task=view&id=498&Itemid=1296

http://smhp.psych.ucla.edu/

http://www.icyd.org/

APPENDIX B

Appendix B

Attachment Title	Relevant Selection Criterion	Page #
News Release: Fifty-One States and Territories Join Common Core State Standards Initiative	(B)(1)(i)	Appendix B, page 1
College and Career Readiness Standards for Reading, Writing, and Speaking and Listening	(B)(1)(i)	Appendix B, page 4
International Benchmarking and the Common Core	(B)(1)(i)	Appendix B, page 100
MOSAIC (Multiple Options for Student Assessment and Instruction Consortium): Memorandum of Understanding	(B)(2)(i)	Appendix B, page 102
States participating in the MOSAIC consortium	(B)(2)(ii)	Appendix B, page 105

News Release

09/01/2009

Fifty-One States And Territories Join Common Core State Standards Initiative

NGA Center, CCSSO Convene State-led Process to Develop Common English-language arts and Mathematics Standards

Contact: Jodi Omear, 202-624-5346
Office of Communications

WASHINGTON—The National Governors Association Center for Best Practices (NGA Center) and the Council of Chief State School Officers (CCSSO) today released the names of the states and territories that have joined the Common Core State Standards Initiative: **Alabama; Arizona; Arkansas; California; Colorado; Connecticut; Delaware; District of Columbia; Florida; Georgia; Hawaii; Idaho; Illinois; Indiana; Iowa; Kansas; Kentucky; Louisiana; Maine; Maryland; Massachusetts; Michigan; Minnesota; Mississippi; Missouri; Montana; Nebraska; Nevada; New Hampshire; New Jersey; New Mexico; New York; North Carolina; North Dakota; Ohio; Oklahoma; Oregon; Pennsylvania; Puerto Rico; Rhode Island; South Carolina; South Dakota; Tennessee; Utah; Vermont; Virgin Islands; Virginia; Washington; West Virginia; Wisconsin; Wyoming**.

In the twenty-six years since the release of *A Nation at Risk,* states have made great strides in increasing the academic rigor of education standards. Yet, America's children still remain behind other nations in terms of academic achievement and preparedness to succeed.

By signing on to the common core state standards initiative, governors and state commissioners of education across the country are committing to joining a state-led process to develop a common core of state standards in English language arts and mathematics for grades K-12. These standards will be research and evidence-based, internationally benchmarked, aligned with college and work expectations and include rigorous content and skills.

"To maintain America's competitive edge, we need all of our students to be prepared and ready to compete with students from around the world," said **NGA Vice Chair Vermont Gov. Jim Douglas**. "Common standards that allow us to internationally benchmark our students' performance with other top countries have the potential to bring about a real and meaningful transformation of our education system to the benefit of all Americans."

"As state school chiefs, we have been discussing and building momentum for state-led, voluntary common standards that are both rigorous and internationally benchmarked for the past two years," stated **CCSSO President and Arkansas Commissioner of Education Ken James**. "The broad level of commitment we have received from states across the nation for this unprecedented effort is both gratifying and exciting. It also clearly illustrates that this is an idea whose time has arrived."

The Common Core State Standards Initiative is being jointly led by the NGA Center and CCSSO in partnership with Achieve, Inc; ACT and the College Board. It builds directly on recent efforts of leading organizations and states that have focused on developing college- and career-ready standards and ensures that these standards can be internationally benchmarked to top-performing countries around the world. The goal is to have a common core of state standards that states can voluntarily adopt. States may choose to include additional standards beyond the common core as long as the common core represents at least 85 percent of the state's standards in English language arts and mathematics.

"Measuring our students against international benchmarks is an important step," said **Virginia Gov. Timothy Kaine**. "Today, we live in a world without borders. It not only matters how Virginia students compare to those in surrounding states – it matters how we compete with countries across the world."

"Only when we agree about what all high school graduates need to be successful will we be able to tackle the most significant challenge ahead of us: transforming instruction for every child," said **CCSSO President-Elect and Maine Education Commissioner Sue Gendron**. "Common standards will provide educators clarity and direction about what all children need to succeed in college and the workplace and allow states to more readily share best practices that dramatically improve teaching and learning. Our graduates and frankly, the future of our economy, cannot wait any longer for our educational practices to give equal opportunity for success to every student."

The NGA Center and CCSSO are coordinating the process to develop these standards and have created an expert validation committee to provide an independent review of the common core state standards, as well as the grade-by-grade standards. This committee will be composed of nationally and internationally recognized and trusted education experts who are neutral to – and independent of – the process. The college- and career-ready standards are expected to be completed in September 2009. The grade-by-grade standards work is expected to be completed in January 2010.

###

Founded in 1908, the National Governors Association (NGA) is the collective voice of the nation's governors and one of Washington, D.C.'s most respected public policy organizations. Its members are the governors of the 50 states, three territories and two commonwealths. NGA provides governors and their senior staff members with services that range from representing states on Capitol Hill and before the Administration on key federal issues to developing and implementing innovative solutions to public policy challenges through the NGA Center for Best Practices. For more information, visit www.nga.org.

The Council of Chief State School Officers (CCSSO) is a nonpartisan, nationwide, nonprofit organization of public officials who head departments of elementary and secondary education in the states, the District of Columbia, the Department of Defense Education Activity, and five U.S. extra-state jurisdictions. CCSSO provides leadership, advocacy, and technical assistance on major educational issues. The Council seeks member consensus on major educational issues and

expresses their views to civic and professional organizations, federal agencies, Congress, and the public. www.ccsso.org.

Please note that this printable version may not contain the full text of any PDF files or other attachments.

Printed from the NGA web site.

College and Career Readiness Standards for Reading, Writing, and Speaking and Listening

Draft for Review and Comment

September 21, 2009

College and Career Readiness Standards for Reading, Writing, and Speaking and Listening

Table of Contents

Introduction
Core Standards for Reading, Writing, and Speaking and Listening i
Student Practices in Reading, Writing, and Speaking and Listening iii
Introductory Evidence Statement for Reading, Writing, and Speaking and Listening Standards v
How to Read the Document vii

Core Standards for Reading Informational and Literary Texts
Standards for the Range and Content of Student Reading 1-A
Standards for Student Performance 1-B

Core Standards for Writing
Standards for the Range and Content of Student Writing 2-A
Standards for Student Performance 2-B

Core Standards for Speaking and Listening
Standards for the Range and Content of Student Speaking and Listening 3-A
Standards for Student Performance 3-B

Applications of the Core
Application of the Core: Research 4-A
Application of the Core: Media 4-B

Illustrative Texts: Exemplars of Reading Text Complexity
Introduction 5
Illustrative Texts with Annotations 6

~~Illustrative Student Writing Samples~~ **- Coming in next draft**
~~Introduction~~
~~Student Writing Samples with Annotations~~

Sample of Works Consulted 31

Core Standards for Reading, Writing, and Speaking and Listening

The Core Standards identify essential college- and career-ready skills and knowledge in reading, writing, and speaking and listening across the disciplines. While the English language arts classroom has often been seen as the proper site for literacy instruction, this document acknowledges that the responsibility for teaching such skills must also extend to the other content areas. Teachers in the social and natural sciences, the humanities, and mathematics need to use their content area expertise to help students acquire the discipline-specific skills necessary to comprehend challenging texts and develop deep knowledge in those fields. At the same time, English language arts teachers not only must engage their students in a rich array of literature but also must help develop their students' ability to read complex works of nonfiction independently.

What is taught is just as important as how it is taught; the Core Standards should be accompanied by a comprehensive, content-rich curriculum. While this document defines the outcomes all students need to reach to be college and career ready, many important decisions about curriculum will necessarily be left to states, districts, schools, teachers, professional organizations, and parents. For example, while the standards require that students read texts of sufficient complexity, quality, and range, this document does not contain a required reading list. If states and districts choose to develop one, they should look at the Reading exemplars provided here to get a sense of the level of complexity students must be able to handle independently when they read. Educators can also model their efforts on reading lists from around the nation and the world as long as the texts ultimately included meet the range and content standards in this document.

Standards today must ready students for competition and collaboration in a global, media-saturated environment. Colleges and universities have become international meetinghouses where people from across the globe learn with and from one another. At the same time, business today is truly a worldwide enterprise. Media-related technology helps shape what goes on in both college and the workplace; indeed, it has in some important ways reshaped the very nature of communication. Students who meet the Core Standards will have the reading, writing, speaking, and listening skills to flourish in the diverse, rapidly changing environments of college and careers.

Although reading, writing, and speaking and listening are articulated separately in the standards that follow, these divisions are made for the sake of clarity and manageability. In reality, the processes of communication are tightly interrelated and often reciprocal. The act of reading can no more be separated from the written word than the act of listening can be from the spoken word. When reading, students demonstrate their comprehension most commonly through a spoken or written interpretation of the text. As students solve problems, share insights, and build the

knowledge they need for college and career success, they draw simultaneously on their capacities to read, write, speak, and listen.

Student Practices in Reading, Writing, and Speaking and Listening

The following practices in reading, writing, and speaking and listening undergird and help unify the rest of the standards document. They are the "premises"—broad statements about the nature of college and career readiness in reading, writing, and speaking and listening—that underlie the individual standards statements and cut across the various sections of the document. Every idea introduced here is subsequently represented in one or more places within the larger document.

* * *

Students who are college and career ready exhibit the following capacities in their reading, writing, and speaking and listening:

1. *They demonstrate independence as readers, writers, speakers, and listeners.*

   Students can, without significant scaffolding or support, comprehend and evaluate complex text across a range of types and disciplines, and they can construct effective arguments and clearly convey intricate or multifaceted information. Likewise, students are independently able to discern a speaker's key points as well as ask questions and articulate their own ideas.

2. *They build strong content knowledge.*

   Students build a base of knowledge across a wide range of subject matter by engaging with works of quality and substance. They demonstrate their ability to become proficient in new areas through research and study. They read purposefully and listen attentively to gain both general knowledge and the specific in-depth expertise needed to comprehend subject matter and solve problems in different fields. They refine their knowledge and share it through substantive writing and speaking.

3. *They respond to the varying demands of audience, task, purpose, and discipline.*

   Students consider their reading, writing, and speaking and listening in relation to the contextual factors of audience, task, purpose, and discipline. They appreciate nuances, such as how the composition and familiarity of the audience should affect tone. They also know that different disciplines call for different types of evidence (e.g., documentary evidence in history, experimental evidence in the natural sciences).

4. *They comprehend as well as critique.*

   Students are engaged and open-minded—but skeptical—readers and listeners. They work diligently to understand precisely what an author or speaker is

   saying, but they also question an author's or speaker's assumptions and assess the veracity of claims.

5. *They privilege evidence.*

   Students cite specific textual evidence when offering an oral or written interpretation of a piece of writing. They use relevant evidence when supporting their own points in writing and speaking, making their reasoning clear to the reader or listener, and they constructively evaluate others' use of evidence.

6. *They care about precision.*

   Students are mindful of the impact of specific words and details, and they consider what would be achieved by different choices. Students pay especially close attention when precision matters most, such as in the case of reviewing significant data, making important distinctions, or analyzing a key moment in the action of a play or novel.

7. *They craft and look for structure.*

   Students attend to structure when organizing their own writing and speaking as well as when seeking to understand the work of others. They understand and make use of the ways of presenting information typical of different disciplines. They observe, for example, how authors of literary works craft the structure to unfold events and depict the setting.

8. *They use technology strategically and capably.*

   Students employ technology thoughtfully to enhance their reading, writing, speaking, and listening. They tailor their searches online to acquire useful information efficiently, and they integrate what they learn using technology with what they learn offline. They are familiar with the strengths and limitations of various technological tools and mediums and can select and use those best suited to their communication goals.

Introductory Evidence Statement for Reading, Writing, and Speaking and Listening Standards

To develop college- and career-ready standards for Reading, Writing, and Speaking and Listening that are rigorous, relevant, and internationally benchmarked, the work group consulted evidence from a wide array of sources. These included standards documents from high-performing states and nations; student performance data (including assessment scores and college grades); academic research; frameworks for assessments, such as NAEP; and results of surveys of postsecondary instructors and employers regarding what is most important for college and career readiness.

The evidence strongly suggests that similar reading, writing, speaking, and listening skills are necessary for success in both college and the workplace. A review of the standards of high-performing nations also suggests that many of these skills are already required in secondary schools internationally. The work group has endeavored to articulate these skills in the Core Standards, focusing educators, students, parents, and resources on what matters most.

Given that a set of standards cannot be simplistically "derived" from any body of evidence, the work group sometimes relied on reasoned judgment to interpret where the evidence was most compelling. For example, there is not a consensus among college faculty about the need for incoming students to be able to comprehend graphs, charts, and tables and to integrate information in these data displays with the information in the accompanying text. Although some evidence suggests that this skill is critical in the workplace and in some entry-level courses, college faculties from the various disciplines disagree on its value (with science and economics faculty rating it more highly than English and humanities professors do). The work group ultimately included a standard on the integration of text and data because the preponderance of the evidence suggests the skill's importance in meeting the demands of the twenty-first-century workplace and some college classrooms.

In most cases, the evidence is clearer. In writing, for example, there is unequivocal value placed on the logical progression of ideas. The expectation that high school graduates will be able to produce writing that is logical and coherent is found throughout the standards of top-performing countries and states. This ability is also valued highly by college faculty and employers. In response to such clear evidence, the work group included Writing student performance standard #5: "Create a logical progression of ideas or events, and convey the relationships among them."

A bibliography of some of the sources the work group drew upon most is included at the end of this document. The reader should also refer to the Core Standards Web site (http://www.corestandards.org), which contains a list of standards linked to relevant sources of evidence.

Finally, while the standards reflect the best evidence available to date, the decisions the work group made are necessarily provisional. The core should be reexamined periodically as additional research on college and career readiness emerges. Indeed, this document may serve as an agenda for such research.

How to Read the Document

This document is divided into three main sections: strands, applications, and supporting materials.

Strands
There are three *strands*: Reading, Writing, and Speaking and Listening. Although each strand is presented discretely for ease of understanding, the document should be considered a coherent whole.

The three strands are each in turn divided into two sections: *Standards for Range and Content* and *Standards for Student Performance*.

> **Standards for Range and Content**
> The Standards for Range and Content in each strand describe the contexts in which college- and career-ready students must be able to read, write, speak, and listen. Rather than merely supplement or illustrate the numbered list of Standards for Student Performance, the Standards for Range and Content are themselves required and carry equal force.
>
> **Standards for Student Performance**
> The Standards for Student Performance in each strand enumerate the essential skills and understandings that students who are college and career ready in reading, writing, speaking, and listening must have no later than the end of high school.

Applications
The clearest examples of the integrated nature of communication are the *Applications of the Core* for Research and Media. The Core Standards for Reading, Writing, and Speaking and Listening have been designed to include the essential skills and knowledge that students need to apply to college and career tasks, such as research and media. Rather than having an additional set of standards that would largely duplicate those already in Reading, Writing, and Speaking and Listening, the document includes the Research and Media applications that draw upon standards already in those strands. This both reaffirms the centrality of the core processes of reading, writing, speaking, and listening and shows how those processes can be combined and extended to describe key communicative acts in the classroom and workplace.

In the Research and Media applications, specific Reading, Writing, and Speaking and Listening standards are identified with a letter or letters corresponding to the relevant strand (R for Reading, W for Writing, and S&L for Speaking and Listening) and a number or letter corresponding to the statement within that strand. For example, R-14 refers to the fourteenth statement in the Standards for Student

Performance in Reading, and W-A refers to the first statement of the Standards for Range and Content in Writing.

Supporting Materials: Reading and Writing Exemplars
Reading and Writing exemplars, and their accompanying annotations, are used to lend further specificity to the standards.

> **Reading Exemplars**
> The Reading exemplars, representing a range of subject areas, time periods, cultures, and formats, illustrate the level of text complexity students ready for college and careers must be able to handle on their own. The exemplars are mostly excerpts or representations of larger works. To be truly college and career ready, students must be able to handle full texts—poems, short stories, novels, technical manuals, research reports, and the like. Annotations accompanying the exemplars explain how each text meets the criterion of high text complexity. The annotations also provide brief performance examples that further clarify the meaning and application of the standards.
>
> ~~**Writing Exemplars**~~ **- Coming in the next draft**
> ~~The Writing exemplars are authentic samples of student writing created across the nation under a variety of conditions and for a variety of purposes and audiences. Annotations accompanying the exemplars indicate how these samples meet the Standards for Student Performance in Writing.~~

Core Standards for Reading Informational and Literary Texts

Standards for the Range and Content of Student Reading

A. **Complexity:** A crucial factor in readiness for college and careers is students' ability to comprehend complex texts independently. In college and careers, students will need to read texts characterized by demanding vocabulary, subtle relationships among ideas or characters, a nuanced rhetorical style and tone, and elaborate structures or formats. These challenging texts require the reader's close attention and often demand rereading in order to be fully understood.

B. **Quality:** The literary and informational texts chosen for study should be rich in content and in a variety of disciplines. All students should have access to and grapple with works of exceptional craft and thought both for the insights those works offer and as models for students' own thinking and writing. These texts should include classic works that have broad resonance and are alluded to and quoted often, such as influential political documents, foundational literary works, and seminal historical and scientific texts. Texts should also be selected from among the best contemporary fiction and nonfiction and from a diverse range of authors and perspectives.

C. **Vocabulary:** To be college and career ready, students must encounter and master a rich vocabulary. Complex texts often use challenging words, phrases, and terms that students typically do not encounter in their daily lives. Specific disciplines and careers have vocabularies of their own. Attentive reading of sophisticated works in a wide range of fields, combined with close attention to vocabulary, is essential to building comprehension and knowledge.

D. **Range:** Students must be able to read a variety of literature, informational texts, and multimedia sources in order to gain the knowledge base they need for college and career readiness.

Literature: Literature enables students to access through imagination a wide range of experiences. By immersing themselves in literature, students enlarge their experiences and deepen their understanding of their own and other cultures. Careful reading of literature entails attentiveness to craft and details of design, which has broad value for students' work in college and career environments.

Informational Text: Because most college and workplace reading is nonfiction, students need to hone their ability to acquire knowledge from informational texts. Workplace and discipline-specific reading will often require students to demonstrate persistence as they encounter a large amount of unfamiliar and often technical vocabulary and concepts. Students must demonstrate facility with the features of texts particular to a variety of disciplines, such as history, science, and mathematics.

Multimedia Sources: Students must be able to integrate what they learn from reading text with what they learn from audio, video, and other digital media. Many of the same critical issues that students face when reading traditional printed texts will arise as they seek to comprehend multimedia, such as determining where the author has chosen to focus, evaluating evidence, and comparing different accounts of similar subjects.

E. **Quantity:** Students must have the capacity to handle independently the quantity of reading material, both in print and online, required in college and workforce training. Studies show that the amount of reading students face in high school is often far lower than that required for typical first-year college courses. Students need to be able to perform a close reading of a much higher volume of texts and to sort efficiently through large amounts of print and online information in search of specific facts or ideas.

Note: *The essential role of independence in college and career readiness:* The significant scaffolding that often accompanies reading in high school usually disappears in college and workforce training environments. Students must therefore have developed their ability to read texts of sufficient complexity, quality, and range on their own. To become independent, students must encounter unfamiliar texts presented without supporting materials.

Core Standards for Reading Informational and Literary Texts

Standards for Student Performance

1. Determine both what the text says explicitly and what can be inferred logically from the text.
2. Support or challenge assertions about the text by citing evidence in the text explicitly and accurately.
3. Discern the most important ideas, events, or information, and summarize them accurately and concisely.
4. Delineate the main ideas or themes in the text and the details that elaborate and support them.
5. Determine when, where, and why events unfold in the text, and explain how they relate to one another.
6. Analyze the traits, motivations, and thoughts of individuals in fiction and nonfiction based on how they are described, what they say and do, and how they interact.
7. Determine what is meant by words and phrases in context, including connotative meanings and figurative language.
8. Analyze how specific word choices shape the meaning and tone of the text.
9. Analyze how the text's organizational structure presents the argument, explanation, or narrative.
10. Analyze how specific details and larger portions of the text contribute to the meaning of the text.
11. Synthesize data, diagrams, maps, and other visual elements with words in the text to further comprehension.
12. Extract key information efficiently in print and online using text features and search techniques.
13. Ascertain the origin, credibility, and accuracy of print and online sources.
14. Evaluate the reasoning and rhetoric that support an argument or explanation, including assessing whether the evidence provided is relevant and sufficient.
15. Analyze how two or more texts with different styles, points of view, or arguments address similar topics or themes.
16. Draw upon relevant prior knowledge to enhance comprehension, and note when the text expands on or challenges that knowledge.
17. Apply knowledge and concepts gained through reading to build a more coherent understanding of a subject, inform reading of additional texts, and solve problems.
18. Demonstrate facility with the specific reading demands of texts drawn from different disciplines, including history, literature, science, and mathematics.

Note: *These Standards for Student Performance, as is the case for every strand, must be demonstrated across the range and content from the preceding page.* They are meant to apply to fiction and nonfiction. For example:

- "Determine when, where, and why events unfold" applies to plot and setting in literature as well as the sequence of a scientific procedure.
- "Analyze the traits, motivations, and thoughts of individuals" applies to studying characters in fiction and figures in historical texts.

Core Standards for Writing

Standards for the Range and Content of Student Writing

A. **Purpose:**

Make an Argument: While many high school students have experience presenting their opinions, they need to be able to make arguments supported by evidence in order to be ready for careers and college. Students must be able to frame the debate over a claim, present the reasoning and evidence for the argument, and acknowledge and address its limitations. In some cases, students will make arguments to gain entry to college or to obtain a job, laying out their qualifications or experience. In college, students might defend an interpretation of a work of literature or of history; in the workplace, employees might write to recommend a course of action.

Inform or Explain: In college and in workforce training, writing is a key means for students to show what they know and to share what they have seen. Writing to inform or explain often requires students to integrate complex information from multiple sources in a lucid fashion. Explanations can take the form of laying out facts about a new technology or documenting findings from historical research; well-crafted explanations often make fresh connections and express ideas creatively.

B. **Audience:** Students must adapt their writing so that it is appropriate to the audience by choosing words, information, structures, and formats that conform to the conventions of the discipline in which they are writing. The form and use of evidence in literary analysis, for example, are likely to be quite different from those in geology or business. Students must also be able to consider their audience's background knowledge and potential objections to an argument.

C. **Situation:**

On-demand Writing: Students must have the flexibility, concentration, and fluency to produce high-quality first-draft text under a tight deadline. College and career readiness requires that students be able to write effectively to a prompt on an exam or respond quickly yet thoughtfully to a supervisor's urgent request for information.

Writing over Time: Students must be able to revisit and make improvements to a piece of their writing over multiple drafts when circumstances encourage or require it. To improve writing through revision, students must be capable of distinguishing good changes from ones that would weaken the writing.

D. **Technology and Collaboration:** Technology offers students powerful tools for producing, editing, and distributing writing as well as for collaboration. Especially in the workplace, writers often use technology to produce documents and to provide feedback.

E. **Quantity:** The evidence is clear that, in order to become better writers, students must devote significant time to producing writing. Students must practice writing several analytical pieces each term if they are to achieve the deep analysis and interpretation of content expected for college and careers.

Note on narrative writing:

Narrative writing is an important mode of writing; it is also a component of making an argument and writing to inform or explain. Telling an interesting story effectively or providing an accurate account of a historical incident requires the skillful use of narrative techniques. Narrative writing requires that students present vivid, relevant details to situate events in a time and place and also craft a structure that lends a larger shape and significance to those details. As an easily grasped and widely used way to share information and ideas with others, narrative writing is a principal stepping-stone to writing forms directly relevant to college and career readiness.

Core Standards for Writing

Standards for Student Performance

1. Establish and refine a topic or thesis that addresses the specific task and audience.
2. Gather the information needed to build an argument, provide an explanation, or address a research question.
3. Sustain focus on a specific topic or argument.
4. Support and illustrate arguments and explanations with relevant details, examples, and evidence.
5. Create a logical progression of ideas or events, and convey the relationships among them.
6. Choose words and phrases to express ideas precisely and concisely.
7. Use varied sentence structures to engage the reader and achieve cohesion between sentences.
8. Develop and maintain a style and tone appropriate to the task, purpose, and audience.
9. Demonstrate command of the conventions of standard written English, including grammar, usage, and mechanics.
10. Represent and cite accurately the data, conclusions, and opinions of others, effectively incorporating them into one's own work while avoiding plagiarism.
11. Assess the quality of one's own writing, and, when necessary, strengthen it through revision.
12. Use technology as a tool to produce, edit, and distribute writing.

When **writing to inform or explain**, students must also do the following:

13. Synthesize information from multiple relevant sources, including graphics and quantitative information when appropriate, to provide an accurate picture of that information.
14. Convey complex information clearly and coherently to the audience through purposeful selection and organization of content.
15. Demonstrate understanding of content by reporting facts accurately and anticipating reader misconceptions.

When **writing arguments**, students must also do the following:

16. Establish a substantive claim, distinguishing it from alternate or opposing claims.
17. Link claims and evidence with clear reasons, and ensure that the evidence is relevant and sufficient to support the claims.
18. Acknowledge competing arguments or information, defending or qualifying the initial claim as appropriate.

Note: "The conventions of standard written English" encompass a range of commonly accepted language practices designed to make writing clear and widely understood. When formal writing contains errors in grammar, usage, and mechanics, its meaning is obscured, its message is too easily dismissed, and its author is often judged negatively. Proper sentence structure, correct verb formation, careful use of verb tense, clear subject-verb and pronoun-antecedent agreement, conventional usage, and appropriate punctuation are of particular importance to formal writing.

Core Standards for Speaking and Listening

Standards for the Range and Content of Student Speaking and Listening

A. **Group and One-to-One Situations:** Students are expected to be able to speak and listen effectively in both groups and one-to-one. Success in credit-bearing college coursework, whether in the humanities, mathematics, or the sciences, depends heavily on being able to take in and respond to the concepts and information conveyed in lectures and class discussions. Success in the workplace is similarly dependent on listening attentively to colleagues and customers and expressing ideas clearly and persuasively.

These speaking and listening skills may need to be applied differently in different settings. The immediate communication between two people might be replaced by formal turn taking in large-group discussions. When working in classroom or workplace teams, students should be able to ask questions that initiate thoughtful discussions, gain the floor in respectful ways, and build on the contributions of others to complete tasks or reach consensus.

B. **Varied Disciplinary Content:** Students must adapt their speaking and listening to a range of disciplines to communicate effectively. Each academic discipline and industry has its own vocabulary and conventions; for instance, evidence is handled and discussed differently in literary analysis than in history or medicine or the sciences. College- and career-ready students must develop a foundation of disciplinary knowledge and conventions in order not only to comprehend the complexity of information and ideas but also to present and explain them.

C. **Multimedia Comprehension:** New technologies expand the role that speaking and listening skills will play in acquiring and sharing knowledge. Students will need to view and listen to diverse media to gain knowledge and also must integrate this information with what they learn through reading text online as well as in print. When speaking, students can draw on media to illustrate their points, make data and evidence vivid, and engage their audience. Multimedia accelerates the speed at which connections between reading, writing, speaking, and listening can be made, requiring students to be ready to use these skills nearly simultaneously.

Core Standards for Speaking and Listening

Standards for Student Performance

1. Select and use a format, organization, and style appropriate to the topic, purpose, and audience.
2. Present information, findings, and supporting evidence clearly and concisely.
3. Make strategic use of multimedia elements and visual displays of data to gain audience attention and enhance understanding.
4. Demonstrate command of formal Standard English when appropriate to task and audience.
5. Listen to complex information, and discern the main ideas, the significant details, and the relationships among them.
6. Follow the progression of the speaker's message, and evaluate the speaker's point of view, reasoning, and use of evidence and rhetoric.
7. Ask relevant questions to clarify points and challenge ideas.
8. Respond constructively to advance a discussion and build on the input of others.

Note: "Style appropriate to the topic, purpose, and audience" includes word choice specific to the demands of the discipline as well as delivery techniques such as gestures and eye contact that contribute to effective message delivery.

"Evaluate the speaker's point of view, reasoning, and use of evidence and rhetoric" includes distinguishing facts from opinions and determining whether the speaker is biased and evidence has been distorted.

Application of the Core: Research

The Core Standards for Reading, Writing, and Speaking and Listening have been designed to include the essential skills and knowledge that students need to apply to college and career tasks such as research. This section shows how standards in the core incorporate the skills of research.

To be college and career ready, students must engage in research and present their findings in writing and orally, in print and online. The ability to conduct research independently and effectively plays a fundamental role in gaining knowledge and insight in college and the workplace.

Research as described here is not limited to the formal, extended research paper nor simply to gathering information from books; rather, research encompasses a flexible yet systematic approach to resolving questions and investigating issues through the careful collection, analysis, synthesis, and presentation of information from a wide range of print and digital sources, such as historical archives and online interviews. With well-developed research skills, students have the tools to engage in sustained inquiry as well as the sort of short, focused research projects that typify many assignments in college and the workplace.

Research in the digital age offers new possibilities as well as new or heightened challenges. While the Internet provides ready access to unprecedented amounts of primary and secondary source material (such as oral histories, historical documents, maps, and scientific reports), students sorting through this wealth of data must be skilled at and vigilant in determining the origin and credibility of these sources.

The following Core Standards pertain to elements of the research process and particular research skills required for college and career readiness:

Formulate research questions:
- Establish and refine a topic or thesis that addresses the specific task and audience. (W-1)
- Establish a substantive claim, distinguishing it from alternate or opposing claims. (W-16)

Gather and evaluate relevant information from a range of sources:
- Gather the information needed to build an argument, provide an explanation or address a research question. (W-2)
- Extract key information efficiently in print and online using text features and search techniques. (R-12)
- Ascertain the origin, credibility, and accuracy of print and online sources. (R-13)
- Evaluate the reasoning and rhetoric that support an argument or explanation, including assessing whether the evidence provided is relevant and sufficient. (R-14)
- Follow the progression of the speaker's message and evaluate the speaker's point of view, reasoning, and use of evidence and rhetoric. (S&L-6)

Analyze research sources:
- Delineate the main ideas or themes in the text and the details that elaborate and support them. (R-4)
- Listen to complex information and discern the main ideas, the significant details, and the relationships among them. (S&L-5)
- Discern the most important ideas, events, or information and summarize them accurately and concisely. (R-3)
- Synthesize data, diagrams, maps, and other visual elements with words in the text to further comprehension. (R-11)
- Synthesize information from multiple relevant sources, including graphics and quantitative information when appropriate, to provide an accurate picture of that information. (W-13)
- Analyze how two or more texts with different styles, points of view, or arguments address similar topics or themes. (R-15)
- Acknowledge competing arguments or information, defending or qualifying the initial claim as appropriate. (W-18)

Report findings:
- Link claims and evidence with clear reasons and ensure that the evidence is relevant and sufficient to support the claims. (W-17)
- Convey complex information clearly and coherently to the audience through purposeful selection and organization of the content. (W-14)
- Demonstrate understanding of the content by reporting the facts accurately and anticipating reader misconceptions. (W-15)
- Present information, findings, and supporting evidence, clearly and concisely. (S&L-2)
- Support and illustrate arguments and explanations with relevant details, examples, and evidence. (W-4)
- Represent and cite accurately the data, conclusions, and opinions of others, effectively incorporating them into one's own work while avoiding plagiarism. (W-10)

Application of the Core: Media

The Core Standards for Reading, Writing, and Speaking and Listening have been designed to include the essential skills and knowledge that students need to apply to college and career tasks such as media analysis and creation. This section shows how standards in the core apply to media.

Rapidly evolving technologies are powerful tools—but only for those who have the skills to put them to work. As the capability of the technology grows, students' command of these skills must only increase.

At the core of media mastery are the same fundamental capacities as are required offline in traditional print forms: an ability to access, understand, and evaluate complex materials and messages and to produce clear, effective communications. Media mastery does, however, call upon students to apply these core skills in new ways and contexts. Media enable students to communicate quickly with a large, often unknown, and broadly diverse audience. Whereas in the past, students may have had days or weeks to digest new information and formulate a response, the online environment pushes students to exercise judgment and present their responses in a matter of minutes.

Speed is not the only new factor. In the electronic world, reading, writing, speaking, and listening are uniquely intertwined. Multimedia forms force students to engage with constantly changing combinations of elements, such as graphics, images, hyperlinks, and embedded video and audio. The technology itself is changing quickly, creating new urgency for adaptation and flexibility on the part of students.

The following Core Standards describe the particular reading, writing, speaking, and listening skills that students will need in order to use media effectively in college and careers:

Standards for Range and Content drawn from each strand

Multimedia Sources: Students must be able to integrate what they learn from reading text with what they learn from audio, video, and other digital media. Many of the same critical issues that students face when reading traditional printed texts will arise as they seek to comprehend multimedia, such as determining where the author has chosen to focus, evaluating evidence, and comparing different accounts of similar subjects. [R-D]

Technology and Collaboration: Technology offers students powerful tools for producing, editing, and distributing writing as well as for collaboration. Especially in the workplace, writers often use technology to produce documents and to provide feedback. [W-D]

Multimedia Comprehension: New technologies expand the role that speaking and listening skills will play in acquiring and sharing knowledge. Students will need to view and listen to diverse media to gain knowledge and integrate this information with what they learn through reading text online as well as in print. When speaking, students can draw on media to illustrate their points, make data and evidence vivid, and engage their audiences. Multimedia accelerates the speed at which connections between reading, writing, and speaking and listening can be made, requiring students to be ready to use these skills nearly simultaneously. [S&L-C]

Standards for Student Performance drawn from each strand

Gather information from a wide array of electronic sources and multimedia:
- Extract key information efficiently in print and online using text features and search techniques. (R-12)
- Synthesize data, diagrams, maps, and other visual elements with words in the text to further comprehension. (R-11)
- Listen to complex information and discern the main ideas, the significant details, and the relationships among them. (S&L-5)

Evaluate information from digital media:
- Ascertain the origin, credibility, and accuracy of print and online sources. (R-13)
- Evaluate the reasoning and rhetoric that support an argument or explanation, including assessing whether the evidence provided is relevant and sufficient. (R-14)
- Follow the progression of the speaker's message and evaluate the speaker's point of view, reasoning, and use of evidence and rhetoric. (S&L-6)

Create and distribute media communications:
- Use technology as a tool to produce, edit, and distribute writing. (W-12)
- Synthesize information from multiple relevant sources, including graphics and quantitative information when appropriate, to provide an accurate picture of that information. (W-13)
- Make strategic use of multimedia elements and visual displays of data to gain audience attention and enhance understanding. (S&L-3)

Illustrative Texts

Exemplars of Reading Text Complexity

As described in the Standards for the Range and Content of Student Reading, college- and career-ready students must be able to read texts of sufficient complexity on their own. Studies show that many students who are unable to read sufficiently challenging texts independently by the end of high school struggle with the reading demands of college; many twenty-first-century careers likewise demand that people be able to obtain, search through, and comprehend large amounts of often technical information.

To develop that ability, students should engage with high-quality texts that provide strong models of thinking and writing, that challenge them intellectually, and that introduce them to rich content, sophisticated vocabulary, and examples of exceptional craft. The reading students do should be broad and deep, allowing them to extend their knowledge of particular subjects as well as learn about the features of texts written for different disciplines, audiences, and purposes. While no sampling can do justice to the numerous ways in which different authors craft complex prose, as a collection the exemplar texts below illustrate the level of complexity that college- and career-ready students should be able to handle independently by the end of high school. Texts in translation have not been included in this draft but will be part of future drafts.

How Text Complexity was Determined

In addition to surveys of required reading in twelfth grade and the first year of college as well as consultations with experts, two leading measurement systems were used to help make the selections below. The first system—a methodology described by Jeanne Chall and her coauthors in *The Qualitative Assessment of Text Difficulty*—employs trained raters to measure the sophistication of vocabulary, density of ideas, and syntactic complexity in a text as well as the general and subject-specific knowledge and the level of reasoning required for understanding it. The second system, Coh-Metrix, incorporates into its computer-based analysis more than sixty specific indices of syntax, semantics, readability, and cohesion to assess text complexity. Central to its assessment are measures of text cohesiveness, which is the degree to which the text uses explicit markers to link ideas. By analyzing the degree to which those links are missing in a text—and therefore the degree to which a reader must make inferences to connect ideas—this measure gauges a key factor in the comprehension demand of a text.

The two methods described above have limitations. The complexity of poems (such as "O Captain! My Captain!") cannot be assessed by Coh-Metrix because poetry adheres to different rules of construction than does prose. Similarly, while individual stories in the sample *New York Times* front pages can be measured for complexity by Coh-Metrix, the method does not capture how the electronic environment enhances or detracts from readability. However, for those exemplar texts whose complexity could be measured by both systems, comparable results were yielded by Coh-Metrix and the Chall method.

Note: The samples of complex text are supplemented by brief performance examples that further clarify the meaning of the standards. These illustrate specifically the application of the performance standards to texts of sufficient complexity, quality, and range. Relevant standards are noted in brackets following each sample performance.

Notes on Illustrative Text #1

Pride and Prejudice by Jane Austen

Jane Austen's *Pride and Prejudice* is a sophisticated literary text featuring multiple plotlines, a style and word choice reflective of its time period and setting, and subtle relationships among characters; the excerpt here can only illustrate some of the complexities that readers of the full work will encounter. The novel's opening sentence—"It is a truth universally acknowledged, that a single man in possession of a good fortune, must be in want of a wife"—signals that today's readers will need to employ literary imagination and historical context to re-create for themselves a world largely in the past. The novel's style is elaborate, with many lengthy and, to the modern ear, formal-sounding sentences typical of the period during which the novel was written. While the dialogue is less formal than much of the surrounding text, words and phrases such as *let* (to mean "rent" or "lease") and *chaise and four* (referring to a type of carriage) mark the novel's setting. The excerpt suggests also the kind of close reading of the subtleties of character that readers must perform. The banter between Mr. and Mrs. Bennet reveals both affection and difference of opinion, and it offers clues to the mores of well-to-do English society in the early nineteenth century.

Sample performance aligned with the Core Standards

Students analyze the first impressions given of Mr. and Mrs. Bennet in the first chapter of *Pride and Prejudice* based on how the characters are described, what they say and do, and how they interact. Students compare these first impressions with their later understanding based on how the characters develop throughout the novel. [R-6]

Illustrative Text #1

from *Pride and Prejudice*

Chapter 1

It is a truth universally acknowledged, that a single man in possession of a good fortune, must be in want of a wife.

However little known the feelings or views of such a man may be on his first entering a neighbourhood, this truth is so well fixed in the minds of the surrounding families that he is considered as the rightful property of some one or other of their daughters.

"My dear Mr. Bennet," said his lady to him one day, "have you heard that Netherfield Park is let at last?"

Mr. Bennet replied that he had not.

"But it is," returned she; "for Mrs. Long has just been here, and she told me all about it."

Mr. Bennet made no answer.

"Do not you want to know who has taken it?" cried his wife impatiently.

"*You* want to tell me, and I have no objection to hearing it."

This was invitation enough.

"Why, my dear, you must know, Mrs. Long says that Netherfield is taken by a young man of large fortune from the north of England; that he came down on Monday in a chaise and four to see the place, and was so much delighted with it, that he agreed with Mr. Morris immediately; that he is to take possession before Michaelmas, and some of his servants are to be in the house by the end of next week."

"What is his name?"

"Bingley."

"Is he married or single?"

"Oh! single, my dear, to be sure! A single man of large fortune; four or five thousand a year. What a fine thing for our girls!"

"How so? how can it affect them?"

"My dear Mr. Bennet," replied his wife, "how can you be so tiresome! You must know that I am thinking of his marrying one of them."

"Is that his design in settling here?"

"Design! nonsense, how can you talk so! But it is very likely that he *may* fall in love with one of them, and therefore you must visit him as soon as he comes."

"I see no occasion for that. You and the girls may go, or you may send them by themselves, which perhaps will be still better, for as you are as handsome as any of them, Mr. Bingley might like you the best of the party."

"My dear, you flatter me. I certainly *have* had my share of beauty, but I do not pretend to be any thing extraordinary now. When a woman has five grown-up daughters she ought to give over thinking of her own beauty."

"In such cases a woman has not often much beauty to think of."

"But, my dear, you must indeed go and see Mr. Bingley when he comes into the neighbourhood."

"It is more than I engage for, I assure you."

"But consider your daughters. Only think what an establishment it would be for one of them. Sir William and Lady Lucas are determined to go, merely on that account, for in general, you know, they visit no new-comers. Indeed you must go, for it will be impossible for us to visit him if you do not."

"You are over-scrupulous surely. I dare say Mr. Bingley will be very glad to see you; and I will send a few lines by you to assure him of my hearty consent to his marrying whichever he chuses of the girls: though I must throw in a good word for my little Lizzy."

"I desire you will do no such thing. Lizzy is not a bit better than the others; and I am sure she is not half so handsome as Jane, nor half so good-humoured as Lydia. But you are always giving *her* the preference."

"They have none of them much to recommend them," replied he; "they are all silly and ignorant, like other girls; but Lizzy has something more of quickness than her sisters."

"Mr. Bennet, how can you abuse your own children in such a way! You take delight in vexing me. You have no compassion on my poor nerves."

"You mistake me, my dear. I have a high respect for your nerves. They are my old friends. I have heard you mention them with consideration these twenty years at least."

"Ah! you do not know what I suffer."

"But I hope you will get over it, and live to see many young men of four thousand a year come into the neighbourhood."

"It will be no use to us if twenty such should come, since you will not visit them."

"Depend upon it, my dear, that when there are twenty, I will visit them all."

Mr. Bennet was so odd a mixture of quick parts, sarcastic humour, reserve, and caprice, that the experience of three-and-twenty years had been insufficient to make his wife understand his character. *Her* mind was less difficult to develope. She was a woman of mean understanding, little information, and uncertain temper. When she was discontented she fancied herself nervous. The business of her life was to get her daughters married; its solace was visiting and news.

Notes on Illustrative Text #2

"O Captain! My Captain!" by Walt Whitman

Though poetry's complexity cannot be assessed by the measures of readability used for the prose exemplars, "O Captain! My Captain!" by Walt Whitman clearly has many of the features of complex texts listed in the Standards for the Range and Content of Student Reading. Modern readers must work to understand what would have been obvious to readers in 1865: "O Captain! My Captain!" is an extended-metaphor poem intended to convey Whitman's and the North's grief over the assassination of Abraham Lincoln so near the conclusion of hostilities in the Civil War. Every element in the poem stands for something else, with the captain representing Lincoln, the ship representing the Union (or the "ship of state"), the voyage representing the war, and so on. Historical context, along with skill in reading literature, is thus particularly important to interpreting this text.

Sample performance aligned with the Core Standards

Students apply knowledge gained from reading the *New York Times* articles on Lincoln's assassination to their understanding of the poem "O Captain! My Captain!" Specifically, students draw on the description of the crowd's response to the attack on Lincoln to inform their understanding of Whitman's poem. [R-17]

Illustrative Text #2

"O Captain! My Captain!" by Walt Whitman

O Captain! my Captain! our fearful trip is done,
The ship has weather'd every rack, the prize we sought is won,
The port is near, the bells I hear, the people all exulting,
While follow eyes the steady keel, the vessel grim and daring,
But O heart! heart! heart!
O the bleeding drops of red,
Where on the deck my Captain lies,
Fallen cold and dead.

O Captain! my Captain! rise up and hear the bells;
Rise up—for you the flag is flung—for you the bugle trills,
For you bouquets and ribbon'd wreaths—for you the shores a-crowding,
For you they call, the swaying mass, their eager faces turning,
Here, Captain! dear father!
This arm beneath your head;
It is some dream that on the deck
You've fallen cold and dead.

My Captain does not answer, his lips are pale and still
My father does not feel my arm, he has no pulse nor will,
The ship is anchor'd safe and sound, its voyage closed and done,
From fearful trip, the victor ship comes in with object won;
Exult, O shores, and ring O bells!
But I with mournful tread
Walk the deck my Captain lies,
Fallen cold and dead.

Notes on Illustrative Text #3

The front page of the *New York Times*, April 15, 1865

The challenge posed to a modern reader by the front page of the *New York Times* on April 15, 1865, is significant in terms of format, timeliness, and point of view. Unlike the graphically heavy front page of modern newspapers, this 1865 *New York Times* front page is mostly uninterrupted columns of text. The reader is obviously expected to proceed from top to bottom and left to right across the page, but little other guidance is provided. Because the assassination of Lincoln was still "breaking news" as this edition of the *Times* would have gone to press, some details of the event would have not yet been known; readers will have to sort out what they know about the assassination from what the people reading the paper on that Saturday morning would just have been learning. Three accounts of the events rather than one are provided here, and the sourcing and tone vary greatly. Certain details found in one place are contradicted in another: the "Detail of the Occurrence," for example, suggests that Lincoln may not have been mortally wounded, but the main headline in the top left-hand corner of the page states "No Hopes Entertained of His Recovery." While the first two accounts aim at a certain objectivity, the third begins with a flourish that may surprise readers more used to a restrained style of journalism: "A stroke from Heaven laying the whole of the city in instant ruin could not have startled us as did the word that broke from Ford's Theatre a half hour ago that the President had been shot."

Sample performance aligned with the Core Standards

Students analyze how the three different accounts on the front page portray Lincoln's assassination, including which details are similar or different. [R-15]

Illustrative Text #3: The front page of the *New York Times*, April 15, 1865

http://timesmachine.nytimes.com/browser/1865/04/15/P1

The New-York Times.

VOL. XIV....NO. 4380. NEW-YORK, SATURDAY, APRIL 15, 1865. PRICE FOUR CENTS

AWFUL EVENT.

President Lincoln Shot by an Assassin.

The Dead Bone at Ford's Theatre Last Night.

THE ACT OF A DESPERATE REBEL.

The President Still Alive at Last Accounts.

No Hopes Entertained of His Recovery.

Attempted Assassination of Secretary Seward.

DETAILS OF THE DREADFUL TRAGEDY.

[OFFICIAL.]

War Department, Washington, April 15- 1:30 A.M.

Maj.-Gen. Dix:

This evening at about 9:30 P.M., at Ford's Theater, the President, while sitting in his private box with Mrs. Lincoln, Mrs. Harris, and Major Rathbum, was shot by an assassin, who suddenly entered the box and approached behind the President.

The assassin then leaped upon the stage, brandishing a large dagger or knife, and made his escape in the rear of the theater.

EUROPEAN NEWS.

THE DEPENDENCIES OF THE EUROPEAN

The Insult to Our Consuls by Portugal.

Portuguese Master at Lisbon Demands Satisfaction.

Disposal of the Remainder of Portuguese Bonds Repudiated.

FINANCIAL AND COMMERCIAL.

ANOTHER ACCOUNT.

Special Dispatch to the New-York Times.

Washington, Friday, April 14.

11.15 P.M.

A stroke from Heaven laying the whole of the city in instant ruin could not have startled us as did the word that broke from Ford's Theater a half hour ago that the President had been shot. It flew everywhere in five minutes, and set five thousand people in swift and excited motion on the instant.

DETAIL OF THE OCCURRENCE.

Washington, Friday, April 14- 12:30 A.M.

The President was shot in a theater tonight, and is, perhaps, mortally wounded. Secretary Seward was also assassinated.

SECOND DISPATCH.

Washington, Friday, April 14. President Lincoln and wife, with other friends, this evening visited Ford's Theater for the purpose of witnessing the performance of the "American Cousin."

Notes on Illustrative Text #4

The Declaration of Independence

The Declaration of Independence represents the kind of rich primary source material students should be able to read on their own by the end of high school. Though some of the lines ("We hold these truths . . .") are familiar to most American readers, the case against Great Britain that the Declaration lays out, expressed in elevated, sometimes archaic language (*unalienable*, *hath*, *usurpations*), requires careful examination to follow in its particulars. The beginning of the document, excerpted here, poses a reading challenge partly because of its philosophical abstractness. The first three sentences, although formally divided, are one continuous list of propositions ("truths") about the nature of government and the rights of the people. Further complicating the reading is that there is little explicit cohesion between sentences—links supplied by words and phrases such as "for example," "moreover," or "in addition"—to help readers understand the relationship between the ideas being expressed.

Sample performance aligned with the Core Standards

Students compare the argument that the Declaration makes justifying revolution to Martin Luther King, Jr.'s defense of civil disobedience in *Letter from Birmingham Jail*. [R-15]

Illustrative Text #4

from The Declaration of Independence

When in the Course of human events, it becomes necessary for one people to dissolve the political bands which have connected them with another, and to assume among the powers of the earth, the separate and equal station to which the Laws of Nature and of Nature's God entitle them, a decent respect to the opinions of mankind requires that they should declare the causes which impel them to the separation.

We hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain unalienable Rights, that among these are Life, Liberty and the pursuit of Happiness. —That to secure these rights, Governments are instituted among Men, deriving their just powers from the consent of the governed, —That whenever any Form of Government becomes destructive to these ends, it is the Right of the People to alter or to abolish it, and to institute new Government, laying its foundation on such principles and organizing its powers in such form, as to them shall seem most likely to effect their Safety and Happiness. Prudence, indeed, will dictate that Governments long established should not be changed for light and transient causes; and accordingly all experience hath shewn, that mankind are more disposed to suffer, while evils are sufferable, than to right themselves by abolishing the forms to which they are accustomed. But when a long train of abuses and usurpations, pursuing invariably the same Object evinces a design to reduce them under absolute Despotism, it is their right, it is their duty, to throw off such Government, and to provide new guards for their future security. —Such has been the patient sufferance of these Colonies; and such is now the necessity which constrains them to alter their former Systems of Government. The history of the present King of Great Britain is a history of repeated injuries and usurpations, all having in direct object the establishment of an absolute Tyranny over these States. To prove this, let Facts be submitted to a candid world.

Notes on Illustrative Text #5

Letter from Birmingham Jail by Martin Luther King, Jr.

Martin Luther King, Jr.'s, *Letter from Birmingham Jail* presents many challenges to the reader in terms of its format, purpose, tone, use of allusions, and language. Apart from letters to the editor (most of which are relatively short), public letters such as King's are uncommon today. The purpose of the text may also be confusing: King is ostensibly addressing his "Fellow Clergymen," but skilled readers will reasonably infer that King's message is intended for a broader audience. Though the tone of the text is measured, King's passion for his cause comes through. The author frequently points outside the *Letter* itself through allusions to other texts, including the Hebrew and Christian scriptures. Moreover, King uses sophisticated vocabulary (*cognizant*, *mutuality*, *provincial*, *gainsaying*) and figurative language (*garment of destiny*) throughout his text. However, the piece is both coherent in that its sequence is signaled ("While confined here . . . But more basically . . . Moreover, I am cognizant . . .") and cohesive in that its clauses and sentences are logically linked for the reader ("Just as the prophets . . . and just as the Apostle Paul . . . so am I compelled . . .").

Sample performance aligned with the Core Standards

Students evaluate the reasoning and rhetoric of the three very different arguments King makes to defend his being in Birmingham. Students assess the different kinds of evidence he uses to support each argument. [R-14]

Illustrative Text #5

from *Letter from Birmingham Jail**

License granted by Intellectual Properties Management, Atlanta, Georgia, as exclusive licensor of the King Estate.

My Dear Fellow Clergymen:

While confined here in the Birmingham city jail, I came across your recent statement calling my present activities "unwise and untimely." Seldom do I pause to answer criticism of my work and ideas. If I sought to answer all the criticisms that cross my desk, my secretaries would have little time for anything other than such correspondence in the course of the day, and I would have no time for constructive work. But since I feel that you are men of genuine good will and that your criticisms are sincerely set forth, I want to try to answer your statements in what I hope will be patient and reasonable terms.

I think I should indicate why I am here In Birmingham, since you have been influenced by the view which argues against "outsiders coming in." I have the honor of serving as president of the Southern Christian Leadership Conference, an organization operating in every southern state, with headquarters in Atlanta, Georgia. We have some eighty-five affiliated organizations across the South, and one of them is the Alabama Christian Movement for Human Rights. Frequently we share staff, educational and financial resources with our affiliates. Several months ago the affiliate here in Birmingham asked us to be on call to engage in a nonviolent direct-action program if such were deemed necessary. We readily consented, and when the hour came we lived up to our promise. So I, along with several members of my staff, am here because I was invited here I am here because I have organizational ties here.

But more basically, I am in Birmingham because injustice is here. Just as the prophets of the eighth century B.C. left their villages and carried their "thus saith the Lord" far beyond the boundaries of their home towns, and just as the Apostle Paul left his village of Tarsus and carried the gospel of Jesus Christ to the far corners of the Greco-Roman world, so am I. compelled to carry the gospel of freedom beyond my own home town. Like Paul, I must constantly respond to the Macedonian call for aid.

Moreover, I am cognizant of the interrelatedness of all communities and states. I cannot sit idly by in Atlanta and not be concerned about what happens in Birmingham. Injustice anywhere is a threat to justice everywhere. We are caught in an inescapable network of mutuality, tied in a single garment of destiny. Whatever affects one directly, affects all indirectly. Never again can we afford to live with the narrow, provincial "outside agitator" idea. Anyone who lives inside the United States can never be considered an outsider anywhere within its bounds.

*As reprinted in *Why We Can't Wait* by King, Jr., M. L. (2000). New York City: Signet Classics.

Notes on Illustrative Text #6

Toni Morrison's Nobel lecture, 1993

Toni Morrison's Nobel lecture, though originally delivered orally, can be read on the page as a complex work of analysis and criticism. Its structure, syntax, imagery, language, and density of ideas contribute to the challenge of studying it in this manner. As this excerpt shows, Morrison begins with a folktale. While the "once upon a time" opening may lead readers into thinking that the lecture will primarily be in narrative form, Morrison uses the tale mainly as a springboard for an abstract, allegorical discussion of language, writing, and those who have no voice in society. Morrison often employs sophisticated sentences that require patience and concentration to follow. Readers may recognize places where Morrison varies sentence patterns to change pace and rhythm—particularly important to the oral delivery of the text. The images Morrison creates are powerful and poetic, the diction is elevated and academic, and the word choice is metaphorical and unconventional: "Official language smitheryed to sanction ignorance and preserve privilege is a suit of armor polished to shocking glitter, a husk from which the knight departed long ago." The richness and abstractness of the ideas in the lecture mean that rereadings may be necessary to comprehend and evaluate the ideas fully.

Sample performance aligned with the Core Standards

Students determine what Morrison means when she compares language to "a bird in the hand," including the different connotations of this phrase that she develops throughout the lecture. Students also explore what Morrison means by saying that both the bird and language can be "dead or alive." [R-7]

Illustrative Text #6

from Toni Morrison's Nobel lecture, 1993

Copyright © The Nobel Foundation 1993. Reprinted by permission.

"Once upon a time there was an old woman. Blind but wise." Or was it an old man? A guru, perhaps. Or a griot soothing restless children. I have heard this story, or one exactly like it, in the lore of several cultures.

"Once upon a time there was an old woman. Blind. Wise."

In the version I know the woman is the daughter of slaves, black, American, and lives alone in a small house outside of town. Her reputation for wisdom is without peer and without question. Among her people she is both the law and its transgression. The honor she is paid and the awe in which she is held reach beyond her neighborhood to places far away; to the city where the intelligence of rural prophets is the source of much amusement.

One day the woman is visited by some young people who seem to be bent on disproving her clairvoyance and showing her up for the fraud they believe she is. Their plan is simple: they enter her house and ask the one question the answer to which rides solely on her difference from them, a difference they regard as a profound disability: her blindness. They stand before her, and one of them says, "Old woman, I hold in my hand a bird. Tell me whether it is living or dead."

She does not answer, and the question is repeated. "Is the bird I am holding living or dead?"

Still she doesn't answer. She is blind and cannot see her visitors, let alone what is in their hands. She does not know their color, gender or homeland. She only knows their motive.

The old woman's silence is so long, the young people have trouble holding their laughter.

Finally she speaks and her voice is soft but stern. "I don't know", she says. "I don't know whether the bird you are holding is dead or alive, but what I do know is that it is in your hands. It is in your hands."

Her answer can be taken to mean: if it is dead, you have either found it that way or you have killed it. If it is alive, you can still kill it. Whether it is to stay alive, it is your decision.

Whatever the case, it is your responsibility.

For parading their power and her helplessness, the young visitors are reprimanded, told they are responsible not only for the act of mockery but also for the small bundle of life sacrificed to achieve its aims. The blind woman shifts attention away from assertions of power to the instrument through which that power is exercised.

Speculation on what (other than its own frail body) that bird-in-the-hand might signify has always been attractive to me, but especially so now thinking, as I have been, about the work I do that has brought me to this company. So I choose to read the bird as language and the woman as a practiced writer. She is worried about how the language she dreams in, given to her at birth, is handled, put into service, even withheld from her for certain nefarious purposes. Being a writer she thinks of language partly as a system, partly as a living thing over which one has control, but mostly as agency—as an act with consequences. So the question the children put to her: "Is it living or dead?" is not unreal because she thinks of language as susceptible to death, erasure; certainly imperiled and salvageable only by an effort of the will. She believes that if the bird in the hands of her visitors is dead the custodians are responsible for the corpse. For her a dead language is not only one no longer spoken or written, it is unyielding language content to admire its own paralysis. Like statist language, censored and censoring. Ruthless in its policing duties, it has no desire or purpose other than maintaining the free range of its own narcotic narcissism, its own exclusivity and dominance. However moribund, it is not without effect for it actively thwarts the intellect, stalls conscience, suppresses human potential. Unreceptive to interrogation, it cannot form or tolerate new ideas, shape other thoughts, tell another story, fill baffling silences. Official language smitheryed to sanction ignorance and preserve privilege is a suit of armor polished to shocking glitter, a husk from which the knight departed long ago. Yet there it is: dumb, predatory, sentimental. Exciting reverence in schoolchildren, providing shelter for despots, summoning false memories of stability, harmony among the public.

Notes on Illustrative Text #7

Inquiry into Life, 12th edition, by Sylvia S. Mader

These excerpts, and the prominent college-level biology textbook from which they are drawn, represent some of the challenges presented by complex writing in natural science, including discipline-specific terms (*covalent bond*, *plasma membrane*, *neurotransmitter*), everyday language used in specialized ways (*shell*, *channel*), abbreviations (H^+, *AChE*), and chains of cause-effect relationships that together describe sometimes elaborate processes. Although the figures the author, Sylvia S. Mader, refers to in the text are not included with these excerpts, students reading the larger work will have to integrate words, illustrations, and diagrams to make full sense of the ideas and concepts she describes. For these reasons and others, comprehension may be difficult for readers who have not had experience independently reading similar kinds of text and who lack a knowledge base in the subject. The author does employ a number of cohesive features to help readers understand the terminology and to link ideas. She repeats content words to let readers follow the flow of ideas; she sets up contrastive situations to illustrate the ideas (within, for example, the first and the third paragraphs below); and she uses transitional links ("In some synapses . . . In other synapses . . .") to help readers construct meaning.

Sample performance aligned with the Core Standards

Students discern the most important information in the description of covalent bonding and provide an accurate summary of the concept. [R-3]

Illustrative Text #7

from *Inquiry into Life*, 12th edition

Copyright © The McGraw-Hill Companies, Inc.

A **covalent bond** results when two atoms share electrons in such a way that each atom has an octet of electrons in the outer shell. In a hydrogen atom, the outer shell is complete when it contains two electrons. If hydrogen is in the presence of a strong electron acceptor, it gives up its electron to become a hydrogen ion (H^+). But if this is not possible, hydrogen can share with another atom and thereby have a completed outer shell. For example, one hydrogen atom will share with another hydrogen atom. Their two orbitals overlap, and the electrons are shared between them. Because they share the electron pair, each atom has a completed outer shell.

* * * * * * * *

The passage of salt (NaCl) across a plasma membrane is of primary importance to most cells. The chloride ion (Cl^-) usually crosses the plasma membrane because it is attracted by positively charged sodium ions (Na^+). First sodium ions are pumped across a membrane, and then chloride ions simply diffuse through channels that allow their passage.

As noted in Figure 4.2*a*, the genetic disorder cystic fibrosis results from a faulty chloride channel. Ordinarily, after chloride ions have passed though the membrane, sodium ions (Na^+) and water follow. In cystic fibrosis, Cl^- transport is reduced, and so is the flow of Na^+ and water.

* * * * * * * *

Once a neurotransmitter has been released into a synaptic cleft and has initiated a response, it is removed from the cleft. In some synapses, the postsynaptic membrane contains enzymes that rapidly inactivate the neurotransmitter. For example, the enzyme **acetylcholinesterase (AChE)** breaks down acetylcholine. In other synapses, the presynaptic membrane rapidly reabsorbs the neurotransmitter, possibly for repackaging in synaptic vesicles or for molecular breakdown. The short existence of neurotransmitters at a synapse prevents continuous stimulation (or inhibition) of postsynaptic membranes.

Notes on Illustrative Text #8

Sample business memo (ACT WorkKeys Reading for Information Test)

Though not a typical kind of reading in high school classrooms, the business communication, such as the one sampled here, is a form that career-ready students will need to be able to comprehend independently. This text, taken from ACT's WorkKeys Reading for Information Test, is challenging in large part because, like many such communications, it contains important, detailed information intended for a specialized audience. Structurally, the text offers little guidance on how it should be read. Potentially vital details appear throughout and are mingled with other details irrelevant to some readers (e.g., those without children). Even the paragraphing is somewhat inconsistent, especially between the first and second paragraphs. While the sentences are not particularly long and the language is not overly technical, the density of information and its lack of prioritization make this a complex text.

Sample performance aligned with the Core Standards

Students infer from the memo the conditions under which children who are under nineteen are not covered by the health plan. [R-1]

Illustrative Text #8

Sample business memo

WorkKeys Reading for Information Test has been reproduced with permission of ACT, Inc.

DETERMINING ELIGIBILITY FOR MEDICAL COVERAGE

All full-time employees of the company who work an average of at least 30 hours per week are eligible under this plan. Coverage begins on the first day of the month following the 30 days of active full-time employment. If employees enroll within 31 days of the date they are eligible, medical evidence of good health is not required. Temporary and part-time employees are not eligible. Employees are no longer eligible under this plan one month after the date they begin active duty in the armed forces of any country and continuing for the duration of their service.

If employees enroll their dependents within 31 days of the date they become eligible, medical evidence of good health is not required. If they do not, they will be required to submit evidence of good health for each dependent, at their expense, which is satisfactory to the company.

The following dependents are eligible under this plan: employees' spouses, employees' unmarried children under age 19, employees' unmarried dependent children under age 23 who are attending trade school, college, or university on a full-time basis, or employees' unmarried disabled children age 19 and over. Coverage ceases when spouses or children cease to be dependent upon employees for support. In the case of employees' spouses this is if they are legally separated or divorced. In the case of disabled children, this is when they are no longer disabled. Coverage will cease when dependents have served in the armed forces of any country for more than one month, or when maximum benefits have been paid.

Notes on Illustrative Text #9

FedViews, July 9, 2009, by Mary C. Daly
(The Federal Reserve Bank of San Francisco's Web site)

This text illustrates some of the difficulties posed by integrating information gained from words and graphics. This sort of challenge is common in writing designed to inform or explain, including writing in the workplace. The bullet point format used here means that the kind of explicit transitions between ideas typically found in prose are missing; readers will have to infer relationships between the points made by the author, Mary C. Daly, and synthesize the information into a coherent whole. Readers will furthermore have to analyze both the words and the graphics, integrate the information, and check to see whether each source of information supports the other. Daly also uses a great deal of specialized language; the terms *feedback loop*, *credit availability*, and *barriers to credit* all appear in just the first bullet point here.

Sample performance aligned with the Core Standards

Students synthesize information drawn from the text as well as the graphs in order to gain an overarching view of the economy on July 9, 2009. [R-11]

Illustrative Text #9

from FedViews, July 9, 2009

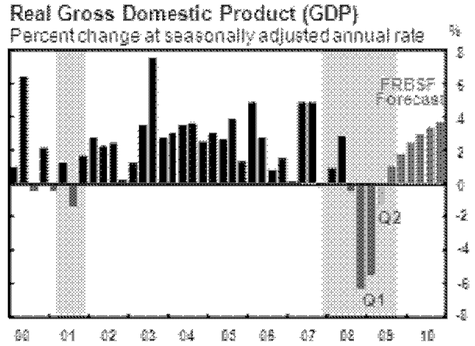
Reprinted from the Federal Reserve Bank of San Francisco's FedViews of July 9, 2009. The opinions expressed in this article do not necessarily reflect the views of the management of the Federal Reserve Bank of San Francisco, or of the Board of Governors of the Federal Reserve System.

Mary C. Daly, vice president and director of the Center for the Study of Innovation and Productivity at the Federal Reserve Bank of San Francisco, states her views on the current economy and the outlook.

- Financial markets are improving, and the crisis mode that has characterized the past year is subsiding. The adverse feedback loop, in which losses by banks and other lenders lead to tighter credit availability, which then leads to lower spending by households and businesses, has begun to slow. As such, investors' appetite for risk is returning, and some of the barriers to credit that have been constraining businesses and households are diminishing.
- Income from the federal fiscal stimulus, as well as some improvement in confidence, has helped stabilize consumer spending. Since consumer spending accounts for two-thirds of all economic activity, this is a key factor affecting our forecast of growth in the third quarter.
- The gradual nature of the recovery will put additional pressure on state and local budgets. Following a difficult 2009, especially in the West, most states began the 2010 fiscal year on July 1 with even larger budget gaps to solve.
- Still, many remain worried that large fiscal deficits will eventually be inflationary. However, a look at the empirical link between fiscal deficits and inflation in the United States shows no correlation between the two. Indeed, during the 1980s, when the United States was running large deficits, inflation was coming down.

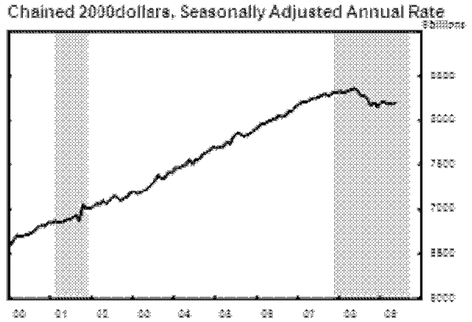
Modest recovery to begin in Q3

Real Gross Domestic Product (GDP)
Percent change at seasonally adjusted annual rate

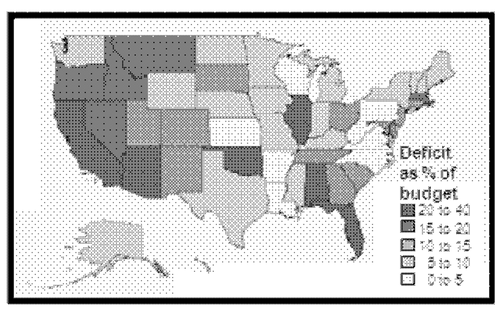


Consumers hanging on

Real Personal Consumption Expenditures
Chained 2000dollars, Seasonally Adjusted Annual Rate

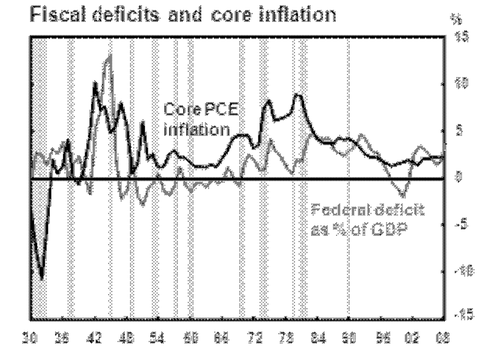


State budget gaps pervasive in 2009



No link between deficits and inflation

Fiscal deficits and core inflation



Notes on Illustrative Text #10

The front page of the *New York Times*, Web version, August 18, 2009, 9:03 a.m. ET

The challenge offered by this online text and others like it is very different from that offered by a complex continuous text in, say, the sciences. The brief passages are not conceptually difficult, the language is not technical or esoteric, and the sentences are not particularly complex. But these characteristics belie the complexity of the reading task. An online text of this kind requires readers to apply their print-reading skills in tandem with their knowledge of how to use online periodicals. The editors and designers have assigned levels of importance to individual stories and images, as measured by their size and position in the layout. The page itself uses words, numbers, icons, and other visual elements (e.g., line, color, and shape) to guide readers further. Headings in various colors direct readers to particular sections (OPINION, MARKETS, HEALTH), while links direct readers to particular stories ("Taliban Talks Are Key Issue in Afghan Vote"). Time markers ("3 minutes ago") help readers assess how new the information in a given story is. The text requires readers to make choices about which links to follow based on their understanding of how online text is typically structured and on a minimum of additional information (e.g., an icon of a camera, a drop-down menu in an ad).

Sample performance aligned with the Core Standards

Students select an article and use search terms and other features of the online text to research a specific aspect of the subject in more depth. [R-12]

Illustrative Text #10

The front page of the *New York Times*, Web version, August 18, 2009, 9:03 a.m. ET

From The New York Times, August 18, 2009. The New York Times: All rights reserved. Used by permission and protected by the Copyright Laws of the United States. The printing, copying, redistribution, or retransmission of the Material without express written permission is prohibited. http://www.nytimes.com

Sample of Works Consulted

I. College Readiness

A. Achieve, Inc. (2004). The American Diploma Project, *Ready or Not: Creating a High School Diploma that Counts*. Washington, DC: Achieve, Inc. (PDF)

B. Achieve, Inc. (2008) *Out of Many, One: Towards Rigorous Common Core Standards from the Ground Up*. Washington, DC: Achieve, Inc. (PDF)

C. ACT. (2009). *ACT College Ready English Standards*. Iowa City, IA: ACT. (PDF)

D. ACT. (2006). *ACT National Curriculum Survey 2005-2006*. Iowa City, IA: ACT. (PDF)

E. ACT. (2007). *Aligning Postsecondary Expectations and High School Practice: The Gap Defined (Policy Implications of the ACT National Curriculum Survey Results 2005-2006)*. Iowa City, IA: ACT. (PDF)

F. ACT. (2006). *Reading Between the Lines: What the ACT Reveals about College Readiness in Reading.* Iowa City, IA: ACT. (PDF)

G. ACT. (2006). *Ready for College and Ready for Work: Same or Different?* Iowa City, IA: ACT. (PDF)

H. ACT. (2007). *Rigor at Risk: Reaffirming Quality in the High School Core Curriculum.* Iowa City, IA: ACT. (PDF)

I. College Board (2008) *AP English Language and Composition and English Literature and Composition Course Description.* New York, NY: College Board. (PDF)

J. College Board (2009) *AP European History Course Description*, New York, NY: College Board. (PDF)

K. College Board (2009) *AP World History Course Description*, New York, NY: College Board. (PDF)

L. College Board. (2006). *College Board Standards for College Success.* New York, NY: College Board. (PDF)

M. Conley, D.T. (2003) *Understanding University Success: A Report from Standards for Success.* Eugene, OR: Center for Educational Policy Research.

N. Intersegmental Committee of the Academic Senates (ICAS). (2002) *Academic Literacy: A Statement of Competencies Expected of Students Entering California's Public Colleges and Universities.* (PDF)

O. Marzano, R.J. and Kendall, J.S. (2007). *The New Taxonomy of Educational Objectives.* Second Edition. Thousand Oaks, CA: Corwin Press.

P. Morreale, S. & Pearson, J. (2008) "Why communication education is important: The centrality of the discipline in the 21st century." *Communication Education*, 57(2), 224-240.

Q. Milewski, G.B., Johnsen, D., Glazer, N., & Kubota, M. (2005). *A Survey to Evaluate the Alignment of the New SAT® Writing and Critical Reading Sections to Curricula and Instructional Practices.* New York, NY: College Entrance Examination Board. (PDF)

R. *Virginia Postsecondary Outreach Campaign and Data Collection, Essential English Skills Analysis.* (Achieve).

II. Career Readiness

A. Achieve, Inc. (2004). *The American Diploma Project, Ready or Not: Creating a High School Diploma that Counts*. Washington, DC: Achieve, Inc. (PDF)

B. ACT. (2007). *Aligning Postsecondary Expectations and High School Practice: The Gap Defined (Policy Implications of the ACT National Curriculum Survey Results 2005-2006)*. Iowa City, IA: ACT. (PDF)

C. ACT. (2006). *Ready for College and Ready for Work: Same or Different?* Iowa City, IA: ACT. (PDF)

D. ACT. (2007). *Rigor at Risk: Reaffirming Quality in the High School Core Curriculum*. Iowa City, IA: ACT. (PDF)

E. Casner-Lotto, J., Rosenblum, E., and Wright, M., (2009). *The Ill-Prepared Workforce: Exploring the Challenges of Employer-Provided Workforce Readiness Training.* The Conference Board.

F. Florida American Diploma Project Survey Results. (Achieve).

G. Hawai'i Career Ready Study. (2007). Commissioned by the Hawai'i P-20 Initiative.(PDF)

H. *Missouri Career Prep Certificate Program Planning Guide,* Missouri Department of Elementary and Secondary Education. (PDF)

I. Morreale, S. & Pearson, J. (2008) "Why communication education is important: The centrality of the discipline in the 21st century." *Communication Education*, 57(2), 224-240.

J. National Alliance of Business. (2002).*The American Diploma Project Workplace Study*. Washington, DC.

K. Partnership for 21st Century Skills. (2009). *Framework for 21st Century Learning*. Tucson, AZ.

L. Qualifications and Curriculum Authority. (2007). *Functional Skills and Standards.* (PDF)

M. The Conference Board. (2008). *New Graduates' Workforce*

Readiness.

III. International Documents

A. **Alberta, Canada:** *English Language Arts Curriculum Outcomes*, 2003. (PDF)

B. **British Columbia, Canada:** *English Language Arts Integrated Resource Package, Prescribed Learning Outcomes,* 2007. (PDF)

C. **British Columbia:** English Literature 12, Integrated Resource Package, 2003. (PDF)

D. **England:** *English Programme of Study for Key stage 4*, 2007. (PDF)

E. **Finland:** *National Core Curriculum for Upper Secondary Schools* for Mother Tongue and Literature, Finnish as the mother tongue, 2003. (PDF)

F. **Hong Kong:** *English Language Curriculum and Assessment Guide*, 2007. (PDF)

G. **Hong Kong:** Hong Kong Examinations and Assessment Authority, 2007 HKCEE English Language, Recommended Texts for the School-Based Assessment Component. (PDF)

H. **Ireland:** *Leaving Certificate/English Syllabus for Higher Level and Ordinary Level.* (PDF)

I. **Ireland:** Prescribed Material for English in the Leaving Certificate Examination in 2009. (PDF)

J. **New South Wales:** *English Stage 6 Syllabus, 1999.* (PDF)

K. **New South Wales**: 2009-2012 HSC, Prescribed Area of Study, Electives and Texts. (PDF)

L. **Ontario, Canada:** *The Ontario Curriculum, English,* 2007. (PDF)

M. **Singapore:** *English Language Syllabus 2001.* (PDF)

N. **Singapore:** O-Level Literature in English (Syllabus 2015), Prescribed Texts for 2009. (PDF)

O. **Victoria, Australia:** *Victorian Certificate of Education Study Design: English/English as a Second Language*, 2006. (PDF)

P. **Victoria, Australia:** VCE English/ESL Text List 2008-2009, VCE Literature Text List 2008. (PDF)

Q. Achieve, Inc., National Governors Association, Council of Chief State School Officers. (2008). *Benchmarking for Success: Ensuring U.S. Students receive a World Class Education.* Washington, DC. (PDF)

R. Education Commission of the States. (2008). *From Competing to Leading: An International Benchmarking Blueprint.* Denver, CO. (PDF)

S. Education Commission of the States. (2009). *International Benchmarking Toolkit.* Denver, CO. (PDF)

T. Organization for Economic Cooperation and Development. (2003). *The PISA 2003 Assessment Framework: Mathematics, Reading, Science and Problem Solving Knowledge and Skills.* Paris, France. (PDF)

U. Organization for Economic Cooperation and Development. (2006). *PISA 2006: Science Competencies for Tomorrow's World, Vol. 1.* [see Chapter 6 for reading assessment results] Paris, France. (PDF)

IV. State and Other Standards Documents

A. **California:** *English-Language Arts Content Standards for California Public Schools.* California Department of Education (1997). (PDF)

B. **Florida:** *2006 Sunshine State Standards K-12 Reading and Language Arts.* Florida Department of Education (2006). (PDF)

C. **Georgia:** Georgia ELA Standards (K-12).

D. **Indiana**: Reading List, Grades 9-12. (PDF)

E. **Massachusetts**: *English Language Arts Curriculum Framework.* Massachusetts Department of Education (June 2001). (PDF)

F. **Minnesota:** *Minnesota Academic Standards, Language Arts (K-12),* (2003). (PDF)

G. **Texas:** *Texas College Readiness Standards*, (2008). (PDF)

H. National Council of Teachers of English and the International Reading Association. (1996). *Standards for the English Language Arts.* (PDF)

I. U.S. Dept. of Education. (2009). *Reading Framework for the National Assessment of Educational Progress 2009.* Washington, DC: National Assessment Governing Board. (PDF)

J. U.S. Dept. of Education. (2007). *Writing Framework for the 2011 National Assessment of Educational Progress.* Washington, DC: National Assessment Governing Board. (MS Word Document)

V. Disciplinary Literacy Research

A. Carnegie Council on Advancing Adolescent Literacy. (2010). *Time to act: An agenda for advancing adolescent literacy for college and career success.* New York, NY: Carnegie Corporation of New York. (PDF)

B. Fang, Z., & Schleppegrell, M. J. (2008). *Reading in secondary content areas.* Ann Arbor: University of Michigan Press.

C. Lee, C.D., Spratley, A. (2010). *Reading in the disciplines: The challenges of adolescent literacy.* New York, NY: Carnegie Corporation of New York. (PDF)

D. Moje, E. B., Young, J. P., Readence, J. E., & Moore, D. W. (2000). Reinventing adolescent literacy for new times: Perennial and millennial issues. *Journal of Adolescent and Adult Literacy, 43,* 400–410.

E. Schleppegrell, M. J. (2004). *The language of schooling: A functional linguistics perspective.* Mahwah, NJ: Lawrence Erlbaum Associates.

F. Shanahan, T., & Shanahan, C. (2008). Teaching disciplinary literacy to adolescents: Rethinking content-area literacy. *Harvard Educational Review, 78,* 40–59.

Evidence for Individual Reading, Writing, and Speaking and Listening Standards

What follows is a sample of sources consulted in the drafting of the Core Standards for Reading, Writing, and Speaking and Listening. Citations are organized by the standard to which they pertain. For example, all sources with specific relevance to reading standard #1 are listed below that standard. Each citation contains a link to the section of the source document that is relevant to the core reading, writing, or speaking and listening standard to which it corresponds. For more information on sources and how they were used in the drafting of the core standards, please refer to the "College and Career Readiness Standards for Reading, Writing, and Speaking and Listening."

Reading Evidence

Reading 1. Determine both what the text says explicitly and what can be inferred logically from the text.

College Readiness

- Achieve, Inc. (2004). *The American Diploma Project, Ready or Not: Creating a High School Diploma that Counts*. Washington, DC: Achieve, Inc. (see sample post-secondary assignment #4, pgs. 98-99)
- Milewski, G.B., Johnsen, D., Glazer, N., & Kubota, M. (2005). *A Survey to Evaluate the Alignment of the New SAT® Writing and Critical Reading Sections to Curricula and Instructional Practices*. New York, NY: College Entrance Examination Board (see pg. 7- skills rated by importance to post-secondary instructors- skill #2 "Making inferences and drawing conclusions")
- ACT. (2006). *ACT National Curriculum Survey 2005-2006*. Iowa City, IA: ACT. (pgs. 44-45, these data have been re-sorted by importance to clarify which skills are most important to post-secondary instructors, see skills #4 and #15).
- *AP English Language and Composition and English Literature and Composition Course Description* (2008), New York, NY: College Board (see pgs. 51-54, and sample exam expectations for literature beginning on 56).
- *AP European and World History Course Descriptions* (2009), New York, NY: College Board (see pgs. 21-24 in AP European History for document-based question expectations). AP World and U.S. History also have these expectations.

Career Readiness

- ACT. (2006). *Ready for College and Ready for Work: Same or Different?* Iowa City, IA: ACT. (pgs. 3-5, see Table 2 "Main Ideas and Supporting Details")
- *Hawai'i Career Ready Study.* (2007). Commissioned by the Hawai'i P-20 Initiative. (see sample task "Review Commercial Real Estate Loan Application," Banking/Loan Officer; see sample task "Review claim letter," Insurance/Claims Agent)

Illustrative International Benchmarks

- A counterpart of this standard appears in the English language arts standards and learning outcomes from the following high performing countries, as defined by their top 10 ranking on the 2006 Programme of International Student Assessment (PISA) Reading Scale:

  1. **Alberta, Canada:** English Language Arts Curriculum Outcomes, 2003 (Grades 10-12) (see 30.2.1.2.a)

Evidence for Individual Reading, Writing, and Speaking and Listening Standards

2. **British Columbia, Canada:** *English Language Arts Integrated Resource Package*, Prescribed Learning Outcomes, 2007 (Grade 12) (see B6, B7)
3. **Ireland:** *Leaving Certificate/English Syllabus* for Higher Level and Ordinary Level (≈ Grades 10-11) (see 5.4.a, Higher; 5.5.a, Ordinary)
4. **Ontario, Canada:** *The Ontario Curriculum, English*, 2007 (see 1.4, Grade 12 Reading & Literature Studies)

- A counterpart of this standard also appears in the English language arts standards of the following :

  1. **Singapore:** *English Language Syllabus 2001*, Learning Outcomes for O-Levels (≈ Grades 10-11) (see 8.1.d, 8.2.d, 8.3.c)

- Organization for Economic Cooperation and Development. (2006). *PISA 2006: Science Competencies for Tomorrow's World, Vol. 1* (see pg. 293, Reading Proficiency Levels 2 and 4) (PISA 2006, Vol. 1, full PDF)
- Organization for Economic Cooperation and Development. (2003). *The PISA 2003 Assessment Framework: Mathematics, Reading, Science and Problem Solving Knowledge and Skills*. Paris, France: Organization for Economic Cooperation and Development. (pgs. 112-115, esp. pg.114 "Retrieving Information")

Illustrative Alignment with State and Other Standards

- Intersegmental Committee of the Academic Senates (ICAS). (2002) *Academic Literacy: A Statement of Competencies Expected of Students Entering California's Public Colleges and Universities.* (see Reading Competencies, Comprehension and Retention, bullet 14)
- Conley, D.T. (2003) *Understanding University Success: A Report from Standards for Success.* Eugene, OR: Center for Educational Policy Research. (see 1.A.2)
- A counterpart of this standard appears in the English language arts standards from the following states:

  1. **California:** *English-Language Arts Content Standards for California Public Schools.* (see 2.5, Grades 11-12, 2.0 Reading Comprehension Grades 11-12, 2.2.a-e Writing Applications Grades 11-12)
  2. **Massachusetts:** *English Language Arts Curriculum Framework*, June 2001. (see General Standard 8: Understanding a Text, General Standard 12: Fiction, General Standard 13: Nonfiction)

U.S. Dept. of Education. (2009). *Reading Framework for the National Assessment of Educational Progress 2009.* Washington, DC: National Assessment Governing Board. (see "Locate and Recall," see "Integrate and Interpret," see Basic and Advanced – Literary; Proficient – Informational)

Reading 2. Support or challenge assertions about the text by citing evidence in the text explicitly and accurately.

College Readiness

- Achieve, Inc. (2004). *The American Diploma Project, Ready or Not: Creating a High School Diploma that Counts.* Washington, DC: Achieve, Inc. (see sample post-secondary assignment #6, pgs. 102-103)

Evidence for Individual Reading, Writing, and Speaking and Listening Standards

- Milewski, G.B., Johnsen, D., Glazer, N., & Kubota, M. (2005). *A Survey to Evaluate the Alignment of the New SAT® Writing and Critical Reading Sections to Curricula and Instructional Practices.* New York, NY: College Entrance Examination Board (see pg. 7- skills rated by importance to post-secondary instructors- skill #7 "Justifying a personal interpretation of a text through specific references")
- ACT. (2006). *ACT National Curriculum Survey 2005-2006.* Iowa City, IA: ACT. (pgs. 44-45, these data have been re-sorted by importance to clarify which skills are most important to post-secondary instructors, see skills #4 and #15).
- *AP English Language and Composition and English Literature and Composition Course Description* (2008), New York, NY: College Board (see pgs. 51-54, and sample exam expectations for literature beginning on 56).
- *AP European and World History Course Descriptions* (2009), New York, NY: College board (see pgs. 21-24 in AP European History for document-based question expectations). AP 5 high performing countries, as defined by their top 10 ranking on the 2006 Programme of International Student Assessment (PISA) Reading Scale:

  1. **Alberta, Canada:** English Language Arts Curriculum Outcomes, 2003 (Grades 10-12) (see 10/20/30 2.3.2.b and 30.3.2.3.c)
  2. **British Columbia, Canada:** *English Language Arts Integrated Resource Package*, Prescribed Learning Outcomes, 2007 (Grade 12) (see B8)
  3. **Ontario, Canada:** *The Ontario Curriculum, English*, 2007 (see 1.4 &1.7, Grade 12 Reading & Literature Studies)
  4. **Victoria, Australia:** *Victorian Certificate of Education Study Design: English/English as a Second Language,* 2007 (≈ Grades 11-12) (see Unit 1, Outcome 1, Key Skill 4; Unit 3, Outcome 1, Key Skill 3)

- A counterpart of this standard also appears in the English language arts standards of the following :

  1. **England:** *English Programme of Study for Key stage 4*, 2005 (≈ Grades 10-11) (see 2.2.d)

- Organization for Economic Cooperation and Development. (2006). *PISA 2006: Science Competencies for Tomorrow's World, Vol. 1* (see pg. 289, example PISA item "Graffiti") (PISA 2006, Vol. 1 full PDF)
- Organization for Economic Cooperation and Development. (2003). *The PISA 2003 Assessment Framework: Mathematics, Reading, Science and Problem Solving Knowledge and Skills.* Paris, France: Organization for Economic Cooperation and Development. (see pg. 115, "Reflecting on and Evaluating the Content of a Text")

Illustrative Alignment with State and Other Standards

- U.S. Dept. of Education. (2009). *Reading Framework for the 2009 National Assessment of Educational Progress.* Washington, DC: National Assessment Governing Board. (see Proficient-Informational bullet 1)
- Conley, D.T. (2003) *Understanding University Success: A Report from Standards for Success.* Eugene, OR: Center for Educational Policy Research. (see 1.A.2)
- A counterpart of this standard appears in the English language arts standards from the following states:

Evidence for Individual Reading, Writing, and Speaking and Listening Standards

1. **California:** *English-Language Arts Content Standards for California Public Schools*. (see 2.4, Reading Comprehension Grades 11-12; 2.2.b, Grades 9-10, 3.2 Literary Response and Analysis Grades 11-12, 2.2.c Writing Applications Grades 11-12)
2. **Massachusetts:** *English Language Arts Curriculum Framework*, June 2001. (see 8.30, General Standard 11: Theme, 11.5, 11.7; General Standard 13: Nonfiction;General Standard 15: Style and Language)

Reading 3. Discern the most important ideas, events, or information, and summarize them accurately and concisely.

College Readiness

- Achieve, Inc. (2004). *The American Diploma Project, Ready or Not: Creating a High School Diploma that Counts.* Washington, DC: Achieve, Inc. (see sample post-secondary assignment #4, pgs. 98-99)
- *Milewski, G.B., Johnsen, D., Glazer, N., & Kubota, M. (2005). A Survey to Evaluate the Alignment of the New SAT® Writing and Critical Reading Sections to Curricula and Instructional Practices. New York, NY: College Entrance Examination Board* (see pg. 7- skills rated by importance to post-secondary instructors- skill #1 "Identifying and/or summarizing the theme or central argument of a text," skill #4 "Understanding and paraphrasing points made in a text")
- ACT (2006), *ACT National Curriculum Survey 2005-2006.* Iowa City, IA: ACT. (pgs. 44-45, these data have been re-sorted by importance to clarify which skills are most important to post-secondary instructors, see skills #1, #2, #3, #6).
- *Virginia Postsecondary Outreach Campaign and Data Collection, Essential English Skills Analysis*. (see Informational Text 2. Survey of multi-disciplinary faculty teams at 30 higher education institutions; included if average rating is at least 7.5 on a scale of 10)
- *Florida American Diploma Project Survey Results.* (see row 9. Survey of faculty members at 18 public higher education institutions; included if average rating is at least 7.5 on a scale of 10)
- *AP English Language and Composition and English Literature and Composition Course Description* (2008), New York, NY: College Board (see pgs. 51-54, and sample exam expectations for literature beginning on 56).

Career Readiness

- Achieve, Inc. (2004). *The American Diploma Project, Ready or Not: Creating a High School Diploma that Counts.* Washington, DC: Achieve, Inc. (Workplace Task #5, pg. 82-83)
- *The American Diploma Project Workplace Study*. (2002). Washington, DC: National Alliance of Business. (See point 3 on pg. 13; data gathered through employer feedback from 21 organizations in eight states representing over 10 industries)

- ACT. (2006). *Ready for College and Ready for Work: Same or Different?* Iowa City, IA: ACT. (pgs. 3-5, see Table 2 "Main Ideas and Supporting Details")

Illustrative International Benchmarks

- A counterpart of this standard appears in the English language arts standards and learning outcomes from the following high performing countries, as defined by their top 10 ranking on the 2006 Programme of International Student Assessment (PISA) Reading Scale:

  1. **Alberta, Canada:** *English Language Arts Curriculum Outcomes*, 2003 (Grades 10-12) (see 20.2.1.2.b)

Evidence for Individual Reading, Writing, and Speaking and Listening Standards

  2. **British Columbia, Canada:** *English Language Arts Integrated Resource Package*, Prescribed Learning Outcomes, 2007 (Grade 12) (see B6, B7)
  3. **Hong Kong:** *English Language Curriculum and Assessment Guide*, 2007. (≈Grades 10-11) (see Reading bullet 2)
  4. **Ireland:** *Leaving Certificate/English Syllabus for Higher Level and Ordinary Level* (≈ Grades 10-11) (see 4.1.1.a; 4.1.1.c)
  5. **Ontario, Canada:** *The Ontario Curriculum, English*, 2007 (Grades 11-12) (see 1.3, Grade 12 Reading & Literature Studies)

- A counterpart of this standard also appears in the English language arts standards of the following :

  1. **Singapore:** *English Language Syllabus 2001*, Learning Outcomes for O-Levels (≈ Grades 10-11) (see 8.1.b, 8.2.b, 8.3.a)

- Organization for Economic Cooperation and Development. (2006). PISA 2006: *Science Competencies for Tomorrow's World, Vol. 1* (see pg. 291, example PISA item "Runners") (PISA 2006, Vol. 1 full PDF)
- Organization for Economic Cooperation and Development. (2003). *The PISA 2003 Assessment Framework: Mathematics, Reading, Science and Problem Solving Knowledge and Skills.* Paris, France: Organization for Economic Cooperation and Development. (see pg. 114, "Forming a Broad General Understanding")

Illustrative Alignment with State and Other Standards

- Intersegmental Committee of the Academic Senates (ICAS). (2002) Academic Literacy: A Statement of Competencies Expected of Students Entering California's Public Colleges and Universities. (see Making the Reading/Writing Connection bullet 2; Reading Competencies, Comprehension and Retention bullets 1, 2 and 5)
- A counterpart of this standard appears in the English language arts standards from the following states:

  1. **Massachusetts:** *English Language Arts Curriculum Framework*, June 2001. (see General Standard 8: Understanding a Text)

- U.S. Dept. of Education. (2009). *Reading Framework for the National Assessment of Educational Progress 2009.* Washington, DC: National Assessment Governing Board. (see "Locate and Recall", see Basic-Informational bullet 1)

Reading 4. Delineate the main ideas or themes in the text and the details that elaborate them.

College Readiness

- Achieve, Inc. (2004). *The American Diploma Project, Ready or Not: Creating a High School Diploma that Counts.* Washington, DC: Achieve, Inc. (see sample post-secondary assignment #4, pgs. 98-99)
- ACT (2006), *ACT National Curriculum Survey 2005-2006.* Iowa City, IA: ACT. (pgs. 44-45, these data have been re-sorted by importance to clarify which skills are most important to post-secondary instructors, see skills #1, #2, #3, #6).

- *Virginia Postsecondary Outreach Campaign and Data Collection, Essential English Skills Analysis*. (see Informational Text 2. Survey of multi-disciplinary faculty teams at 30 higher education institutions; included if average rating is at least 7.5 on a scale of 10)
- *Florida American Diploma Project Survey Results*. (see row 9. Survey of faculty members at 18 public higher education institutions; included if average rating is at least 7.5 on a scale of 10)
- *AP English Language and Composition and English Literature and Composition Course Description* (2008), New York, NY: College Board (see pgs. 51-54, and sample exam expectations for literature beginning on 56).

Career Readiness

- Achieve, Inc. (2004). *The American Diploma Project, Ready or Not: Creating a High School Diploma that Counts.* Washington, DC: Achieve, Inc. (Workplace Task #5, pg. 82-83)
- *The American Diploma Project Workplace Study*. (2002). Washington, DC: National Alliance of Business. (See point 2, page 12; data gathered through employer feedback from 21 organizations in eight states representing over 10 industries)
- ACT. (2006). *Ready for College and Ready for Work: Same or Different?* Iowa City, IA: ACT. (pgs. 3-5, see Table 2 "Main Ideas and Supporting Details")

Illustrative International Benchmarks

- A counterpart of this standard appears in the English language arts standards and learning outcomes from the following high performing countries, as defined by their top 10 ranking on the 2006 Programme of International Student Assessment (PISA) Reading Scale:

  1. **Alberta, Canada:** *English Language Arts Curriculum Outcomes*, 2003 (Grades 10-12) (see 20.2.1.2.b; 10/20/30.2.3.2.f)
  2. **British Columbia, Canada:** *English Language Arts Integrated Resource Package, Prescribed Learning Outcomes*, 2007 (Grade 12) (see B6, B7)
  3. **Hong Kong:** *English Language Curriculum and Assessment Guide*, 2007. (≈Grades 10-11) (see Reading bullet 2)
  4. **Ireland:** *Leaving Certificate/English Syllabus for Higher Level and Ordinary Level* (≈ Grades 10-11) (see 4.1.1.a)
  5. **Ontario, Canada:** *The Ontario Curriculum, English*, 2007 (Grades 11-12) (see 1.3 and 1.6, Grade 12 Reading & Literature Studies)
  6. **Victoria, Australia:** *Victorian Certificate of Education Study Design: English/English as a Second Language*, 2007 (≈ Grades 11-12) (see Unit 1, Outcome 1, Key Knowledge 1; Unit 2, Outcome 1, Key Skill 2; Unit 3, Outcome 2, Key Knowledge 2)
- A counterpart of this standard also appears in the English language arts standards of the following :

  1. **England:** *English Programme of Study for Key stage 4*, 2005 (≈ Grades 10-11) (see 1.4.a-b)
  2. **Singapore:** *English Language Syllabus 2001*, Learning Outcomes for O-Levels (≈ Grades 10-11)
     (Did not participate in PISA) (see 8.1.b-c, 8.2.b; 9.1.c)

- Organization for Economic Cooperation and Development. (2006). PISA 2006: *Science Competencies for Tomorrow's World, Vol. 1* (see pg. 291, example PISA item "Runners") (PISA 2006, Vol. 1 full PDF)
- Organization for Economic Cooperation and Development. (2003). *The PISA 2003 Assessment Framework: Mathematics, Reading, Science and Problem Solving Knowledge and Skills.* Paris,

Evidence for Individual Reading, Writing, and Speaking and Listening Standards

France: Organization for Economic Cooperation and Development. (see pg. 114, "Forming a Broad General Understanding")

Illustrative Alignment with State and Other Standards

- *Out of Many, One: Towards Rigorous Common Core Standards from the Ground Up*. (2008). Washington, DC: Achieve. 2008. (see pg. 17, F2 - in 12 of 12 states analyzed)
- Intersegmental Committee of the Academic Senates (ICAS). (2002) Academic Literacy: A Statement of Competencies Expected of Students Entering California's Public Colleges and Universities. (see Reading Competencies, Comprehension and Retention bullets 5 and 6, Listening bullet 2)
- A counterpart of this standard appears in the English language arts standards from the following states:

  1. **Massachusetts:** English Language Arts Curriculum Framework, June 2001. (see General Standard 8: Understanding a Text, 8.30; General Standard 11: Theme, 11.5, 11.6, 11.7)

- U.S. Dept. of Education. (2009). *Reading Framework for the National Assessment of Educational Progress 2009.* Washington, DC: National Assessment Governing Board. (see "Locate and Recall")

Reading 5. Determine when, where, and why events unfold in the text, and explain how they relate to one another.

College Readiness

- ACT. (2006). *ACT National Curriculum Survey 2005-2006.* Iowa City, IA: ACT. (pgs. 44-45, these data have been re-sorted by importance to clarify which skills are most important to post-secondary instructors, see skills #11, #14, #21, #24).
- *Virginia Postsecondary Outreach Campaign and Data Collection, Essential English Skills Analysis*. (see Informational Text 6. Survey of multi-disciplinary faculty teams at 30 higher education institutions; included if average rating is at least 7.5 on a scale of 10.)
- *Florida American Diploma Project Survey Results*. (see row 20. Survey of faculty members at 18 public higher education institutions; included if average rating is at least 7.5 on a scale of 10)
- *AP English Language and Composition and English Literature and Composition Course Description* (2008), New York, NY: College Board (see pgs. 51-54, and sample exam expectations for literature beginning on 56).

Career Readiness

- ACT. (2006). *Ready for College and Ready for Work: Same or Different?* Iowa City, IA: ACT. (pgs. 3-5, see Table 2 "Sequential, Comparative, and Cause-Effect Relationships")
- *The American Diploma Project Workplace Study*. (2002). Washington, DC: National Alliance of Business. (see points 1 and 2, page 12; data gathered through employer feedback from 21 organizations in eight states representing over 10 industries)

Illustrative International Benchmarks

- A counterpart of this standard appears in the English language arts standards and learning outcomes from the following high performing countries, as defined by their top 10 ranking on the 2006 Programme of International Student Assessment (PISA) Reading Scale:

1. **Alberta, Canada:** English Language Arts Curriculum Outcomes, 2003 (Grades 10-12) (see 30.2.1.2.b)
2. **Finland:** *National Core Curriculum for Upper Secondary Schools* for Mother Tongue and Literature, Finnish as the mother tongue, 2003 (≈ Grades 10-12) (see AI 2.O.1)
3. **Hong Kong:** *English Language Curriculum and Assessment Guide*, 2007. (≈Grades 10-11) (see Reading bullets 3 and 10; Language Development bullet 2, dash 2)
4. **Ireland:** *Leaving Certificate/English Syllabus* for Higher Level and Ordinary Level (≈ Grades 10-11) (see 4.2.1.b, Higher Level)
5. **Ontario, Canada:** *The Ontario Curriculum, English,* 2007 (Grades 11-12) (see 1.6, Grade 12 Reading & Literature Studies)

- A counterpart of this standard also appears in the English language arts standards of the following :

  1. **England:** *English Programme of Study for Key stage 4*, 2005 (≈ Grades 10-11) (see 2.2.a; 2.2.k)

- Organization for Economic Cooperation and Development. (2006). *PISA 2006: Science Competencies for Tomorrow's World, Vol. 1* (see pg. 293, Reading Proficiency Level 3)(PISA 2006, Vol. 1 full PDF)
- Organization for Economic Cooperation and Development. (2003). *The PISA 2003 Assessment Framework: Mathematics, Reading, Science and Problem Solving Knowledge and Skills.* Paris, France: Organization for Economic Cooperation and Development. (pg. 115, "Developing an Interpretation")

Illustrative Alignment with State and Other Standards

- U.S. Dept. of Education. (2009). *Reading Framework for the 2009 National Assessment of Educational Progress.* Washington, DC: National Assessment Governing Board. (see Proficient – Literary bullet 2)
- Conley, D.T. (2003) *Understanding University Success: A Report from Standards for Success.* Eugene, OR: Center for Educational Policy Research. (see I.A.4)
- A counterpart of this standard appears in the English language arts standards from the following states:

  1. **California:** *English-Language Arts Content Standards for California Public Schools.* (see 3.6, Reading Comprehension Grades 9-10)
  2. **Massachusetts:** *English Language Arts Curriculum Framework*, June 2001. (see General Standard 13: Nonfiction, 13.25, 13.27)

Reading 6. Analyze the traits, motivations, and thoughts of individuals in fiction and nonfiction based on how they are described, what they say and do, and how they interact.

College Readiness

- ACT (2008) *College Readiness Standards*. Iowa City IA (see p. 21: Sequential, Comparative, and Cause-Effect Relationships)

Evidence for Individual Reading, Writing, and Speaking and Listening Standards

- *AP English Language and Composition and English Literature and Composition Course Description* (2008), New York, NY: College Board (see pgs. 51-54, and sample exam expectations for literature beginning on 56).

Career Readiness

Illustrative International Benchmarks

- A counterpart of this standard appears in the English language arts standards and learning outcomes from the following high performing countries, as defined by their top 10 ranking on the 2006 Programme of International Student Assessment (PISA) Reading Scale:

  1. **Alberta, Canada:** English Language Arts Curriculum Outcomes, 2003 (Grades 10-12) (see 30.2.1.2.d; 30.2.3.1.c; 20/30.2.3.2.d; 10/20/30.5.1.1.c)
  2. **Victoria, Australia:** *Victorian Certificate of Education Study Design: English/English as a Second Language*, 2007 (≈ Grades 11-12) (see Unit 1, Outcome 1, Key Knowledge 1)

- A counterpart of this standard also appears in the English language arts standards of the following :

  1. **Singapore:** *English Language Syllabus 2001*, Learning Outcomes for O-Levels (≈ Grades 10-11) (see 9.2.d; 8.2.d)

Illustrative Alignment with State and Other Standards

- *Out of Many, One: Towards Rigorous Common Core Standards from the Ground Up.* (2008). Washington, DC: Achieve. 2008. (see pg. 17, H8– in 9 of 12 states analyzed)
- Conley, D.T. (2003) *Understanding University Success: A Report from Standards for Success.* Eugene, OR: Center for Educational Policy Research. (see I.A.4)
- U.S. Dept. of Education. (2009). *Reading Framework for the National Assessment of Educational Progress 2009.* Washington, DC: National Assessment Governing Board. (see Proficient bullets 1 and 3 and Advanced bullet 3- Literary, see "Integrate and Interpret")
- A counterpart of this standard appears in the English language arts standards from the following states:

  1. **California:** *English-Language Arts Content Standards for California Public Schools* (see Reading 3.3, 3.4, grades 9-10)

Reading 7. Determine what is meant by words and phrases in context, including connotative meanings and figurative language.

College Readiness

- Achieve, Inc. (2004). *The American Diploma Project, Ready or Not: Creating a High School Diploma that Counts.* Washington, DC: Achieve, Inc. (see sample post-secondary assignment #6, pgs. 102-103)
- Milewski, G.B., Johnsen, D., Glazer, N., & Kubota, M. (2005). *A Survey to Evaluate the Alignment of the New SAT® Writing and Critical Reading Sections to Curricula and Instructional*

Practices. New York, NY: College Entrance Examination Board (see pg. 7- skills rated by importance to post-secondary instructors- skill #8 "Determining the meaning of unfamiliar words from context," skill #18 "Understanding figurative language…")

- ACT. (2006). *ACT National Curriculum Survey 2005-2006.* Iowa City, IA: ACT. (pgs. 44-45, these data have been re-sorted to clarify which skills are most important to post-secondary instructors, see skill #7, skill #19).
- *Virginia Postsecondary Outreach Campaign and Data Collection, Essential English Skills Analysis*. (See Language 4. Survey of multi-disciplinary faculty teams at 30 higher education institutions; included if average rating is at least 7.5 on a scale of 10)
- *AP English Language and Composition and English Literature and Composition Course Description* (2008), New York, NY: College Board (see pgs. 51-54, and sample exam expectations for literature beginning on 56).

Career Readiness

- ACT (2006). *Ready for College and Ready for Work: Same or Different?* Iowa City, IA: ACT. (pgs. 3-5, see Table 2 "Meaning of Words")
- ACT (2009) See ACT WorkKeys "Reading for Information" Level 5 requirements (Level 5 is workplace training and college ready).
- *The American Diploma Project Workplace Study*. (2002). Washington, DC: National Alliance of Business. (see pg. 11, point d; data gathered through employer feedback from 21 organizations in eight states representing over 10 industries)

Illustrative International Benchmarks

- A counterpart of this standard appears in the English language arts standards and learning outcomes from the following high performing countries, as defined by their top 10 ranking on the 2006 Programme of International Student Assessment (PISA) Reading Scale:

  1. **Alberta, Canada:** *English Language Arts Curriculum Outcomes*, 2003 (Grades 10-12) (see 20.2.1.2.f)
  2. **British Columbia, Canada:** *English Language Arts Integrated Resource Package,* Prescribed Learning Outcomes, 2007 (Grade 12) (see B6; B13)
  3. **Finland:** *National Core Curriculum for Upper Secondary Schools* for Mother Tongue and Literature, Finnish as the mother tongue, 2003 (≈ Grades 10-12) (see AI 2.CC.1)
  4. **Hong Kong:** *English Language Curriculum and Assessment Guide,* 2007. (≈Grades 10-11) (Listening, bullet 8; Reading, bullets 1 and 12)
  5. **Ontario, Canada:** *The Ontario Curriculum, English,* 2007 (Grades 11-12, see 3.1-3.3, Reading and Literature Studies)
  6. **Victoria, Australia:** *Victorian Certificate of Education Study Design: English/English as a Second Language*, 2007 (≈ Grades 11-12) (see Unit 2, Outcome 1, Key Knowledge 4)

- A counterpart of this standard also appears in the English language arts standards of the following :

  1. **Singapore:** *English Language Syllabus 2001*, Learning Outcomes for O-Levels (≈ Grades 10-11) (see 7.d)

Illustrative Alignment with State and Other Standards

Evidence for Individual Reading, Writing, and Speaking and Listening Standards

- Intersegmental Committee of the Academic Senates (ICAS). (2002) *Academic Literacy: A Statement of Competencies Expected of Students Entering California's Public Colleges and Universities.* (see Reading Competencies, Comprehension and Retention bullet 15; Listening bullet 3)
- Conley, D.T. (2003) *Understanding University Success: A Report from Standards for Success.* Eugene, OR: Center for Educational Policy Research. (see I.B.3)
- U.S. Dept. of Education. (2009). *Reading Framework for the National Assessment of Educational Progress 2009.* Washington, DC: National Assessment Governing Board. (see "Vocabulary Assessment on the 2009 Reading Assessment," see pg. 47 "Preliminary Achievment Levels: Vocabulary")
- A counterpart of this standard appears in the English language arts standards from the following states:

  1. **Massachusetts:** *English Language Arts Curriculum Framework*, June 2001. (General Standard 4: Vocabulary and Concept Development, 4.23)

Reading 8. Analyze how specific word choices shape the meaning and tone of the text.

College Readiness

- *Milewski, G.B., Johnsen, D., Glazer, N., & Kubota, M. (2005). A Survey to Evaluate the Alignment of the New SAT® Writing and Critical Reading Sections to Curricula and Instructional Practices. New York, NY: College Entrance Examination Board* (see pg. 7- skills rated by importance to post-secondary instructors- skill #14: "Understanding words that have multiple definitions," skill #17: "Distinguishing between connotative and denotative meanings of words," skill #20: "Identifying the tone of the the text.")
- ACT. (2006). *ACT National Curriculum Survey 2005-2006.* Iowa City, IA: ACT. (pgs. 44-45, these data have been re-sorted by importance to clarify which skills are most important to post-secondary instructors, see skills #7, #10, and #19).
- *AP English Language and Composition and English Literature and Composition Course Description* (2008), New York, NY: College Board (see pgs. 51-54, and sample exam expectations for literature beginning on 56).

Career Readiness

Illustrative International Benchmarks

- A counterpart of this standard appears in the English language arts standards and learning outcomes from the following high performing countries, as defined by their top 10 ranking on the 2006 Programme of International Student Assessment (PISA) Reading Scale:

  1. **Alberta, Canada**: English Language Arts Curriculum Outcomes, 2003 (Grades 10-12) (see 30.2.1.2.f; 20.2.1.2.e; 30.2.2.2.b and c)
  2. **British Columbia, Canada**: *English Language Arts Integrated Resource Package*, Prescribed Learning Outcomes, 2007 (Grade 12) (see B13)
  3. **Finland**: *National Core Curriculum for Upper Secondary Schools* for Mother Tongue and Literature, Finnish as the mother tongue, 2003 (≈ Grades 10-12) (see AI 2.CC.1; AI 5.CC.3)
  4. **Ireland:** *Leaving Certificate/English Syllabus* for Higher Level and Ordinary Level (≈ Grades 10-11) (see 4.3.1.a; 4.1.1.h)

5. **New South Wales, Australia:** *English Stage 6 Syllabus*, 1999 (Grades 11-12) Outcome 4; C-4, 4.1, 4.2, 4.3, HSC; C-4, 4.1, 4.2, Preliminary and C-7.1, Preliminary)
6. **Ontario, Canada:** *The Ontario Curriculum, English*, 2007 (Grades 11-12) (see 2.3, Grade 12 Reading and Literature)
7. **Victoria, Australia:** *Victorian Certificate of Education Study Design: English/English as a Second Language*, 2007 (≈ Grades 11-12) (see Unit 3, Outcome 2, Key Knowledge 1)

- A counterpart of this standard also appears in the English language arts standards of the following :

  1. **England:** *English Programme of Study for Key stage 4*, 2005 (≈ Grades 10-11) (see 2.2.j; 2.2.m)
  2. **Singapore:** *English Language Syllabus 2001*, Learning Outcomes for O-Levels (≈ Grades 10-11) (see 6.b)

- Organization for Economic Cooperation and Development. (2006). *PISA 2006: Science Competencies for Tomorrow's World, Vol. 1* (see pg. 289, example PISA item "Graffiti") (PISA 2006, Vol. 1 full PDF).

Illustrative Alignment with State and Other Standards

- *Out of Many, One: Towards Rigorous Common Core Standards from the Ground Up*. (2008). Washington, DC: Achieve. 2008. (see pg. 17, A6- in 11 of 12 states analyzed)
- Conley, D.T. (2003) *Understanding University Success: A Report from Standards for Success*. Eugene, OR: Center for Educational Policy Research. (see I.C.3)
- A counterpart of this standard appears in the English language arts standards from the following states:

  1. **California:** *English-Language Arts Content Standards for California Public Schools* (see 2.2 Reading Comprehension Grades 11-12; 3.3 Literary Response and Analysis Grades 11-12, 2.2.d Writing Applications Grades 11-12)
  2. **Massachusetts:** *English Language Arts Curriculum Framework*, June 2001. (see 14.6; and General Standard 15: Style and Language, 15.7, 15.10)

- U.S. Dept. of Education. (2009). *Reading Framework for the National Assessment of Educational Progress 2009*. Washington, DC: National Assessment Governing Board. (see Proficient - Literary bullet 4, see "Critique and Evaluate")

Reading 9. Analyze how the text's organizational structure presents the argument, explanation, or narrative.

College Readiness

- *AP English Language and Composition and English Literature and Composition Course Description* (2008), New York, NY: College Board (see pgs. 51-54, and sample exam expectations for literature beginning on 56).
- Milewski, G.B., Johnsen, D., Glazer, N., & Kubota, M. (2005). *A Survey to Evaluate the Alignment of the New SAT® Writing and Critical Reading Sections to Curricula and Instructional Practices*. New York, NY: College Entrance Examination Board (see pg. 7- skills rated by importance to post-secondary instructors- skill #3 "Understanding organizational strategies such as introduction, supporting examples, summary")
- ACT. (2006). *ACT National Curriculum Survey 2005-2006*. Iowa City, IA: ACT. (pgs. 44-45, these data have been re-sorted by importance to clarify which skills are most important to post-secondary instructors, see skills #1, #2, #6, #10, #12).

Evidence for Individual Reading, Writing, and Speaking and Listening Standards

Career Readiness

Illustrative International Benchmarks

- A counterpart of this standard appears in the English language arts standards and learning outcomes from the following high performing countries, as defined by their top 10 ranking on the 2006 Programme of International Student Assessment (PISA) Reading Scale:

  1. **Alberta, Canada**: English Language Arts Curriculum Outcomes, 2003 (Grades 10-12) (see 30.2.2.1.a; 30.2.2.1.c)
  2. **British Columbia, Canada**: *English Language Arts Integrated Resource Package*, Prescribed Learning Outcomes, 2007 (Grade 12) (see B12)
  3. **Finland**: *National Core Curriculum for Upper Secondary Schools* for Mother Tongue and Literature, Finnish as the mother tongue, 2003 (≈ Grades 10-12) (see AI 2.CC.1)
  4. **Hong Kong**: *English Language Curriculum and Assessment Guide*, 2007. (≈Grades 10-11) (see Reading, bullet 10)
  5. **Ireland**: *Leaving Certificate/English Syllabus* for Higher Level and Ordinary Level (≈ Grades 10-11) (see 4.2.1.b; 4.4.1.c; 4.1.1.h; 5.5.b, Ordinary Level; 5.4.c, Higher Level)
  6. **New South Wales, Australia**: *English Stage 6 Syllabus*, 1999 (Grades 11-12) (see C-4, 4.1, 4.2)
  7. **Ontario, Canada**: *The Ontario Curriculum, English*, 2007 (Grades 11-12) (see 1.6, Grade 12 Reading and Literature)
  8. **Victoria, Australia**: *Victorian Certificate of Education Study Design: English/English as a Second Language*, 2007 (≈ Grades 11-12) (see Unit 4, Outcome 2, Key Knowledge 1 and Skill 1; Unit 1, Outcome 1, Key Skills 1 and 4; Unit 1, Outcome 2, Key Knowledge 1 and 2; Unit 2, Outcome 1, Key Knowledge 2 and 4 and Skill 1; Unit 3, Outcome 1, Key Knowledge 2 and Skill 1; Unit 2, Outcome 3, Key Knowledge 2)

- A counterpart of this standard also appears in the English language arts standards of the following :

  1. **England**: *English Programme of Study for Key stage 4*, 2005 (≈ Grades 10-11) (see 2.2.k)
  2. **Singapore**: *English Language Syllabus 2001*, Learning Outcomes for O-Levels (≈ Grades 10-11) (see 6.b, 7.c)

- Organization for Economic Cooperation and Development. (2003). *The PISA 2003 Assessment Framework: Mathematics, Reading, Science and Problem Solving Knowledge and Skills*. Paris, France: Organization for Economic Cooperation and Development. (pg. 116, "Reflecting on and Evaluating the Form of a Text")
- Organization for Economic Cooperation and Development. (2006). *PISA 2006: Science Competencies for Tomorrow's World, Vol. 1* (See pg. 289, example PISA item "Graffiti") (PISA

2006, Vol. 1 full PDF)

Illustrative Alignment with State and Other Standards

- Conley, D.T. (2003) *Understanding University Success: A Report from Standards for Success.* Eugene, OR: Center for Educational Policy Research. (see I.C.3)
- A counterpart of this standard appears in the English language arts standards from the following states:

  1. **California**: *English-Language Arts Content Standards for California Public Schools* (see Reading 2.2, grades 11-12)
  2. **Massachusetts**: *English Language Arts Curriculum Framework*, June 2001. (see General Standard 13: Nonfiction 13.25, 13.27)

- U.S. Dept. of Education. (2009). *Reading Framework for the National Assessment of Educational Progress 2009.* Washington, DC: National Assessment Governing Board. (see "Critique and Evaluate")

Reading 10. Analyze how specific details and larger portions of the text contribute to the meaning of the text.

College Readiness

- Achieve, Inc. (2004). *The American Diploma Project, Ready or Not: Creating a High School Diploma that Counts.* Washington, DC: Achieve, Inc. (see sample post-secondary assignment #4, pgs. 98-99)
- Milewski, G.B., Johnsen, D., Glazer, N., & Kubota, M. (2005). *A Survey to Evaluate the Alignment of the New SAT® Writing and Critical Reading Sections to Curricula and Instructional Practices.* New York, NY: College Entrance Examination Board (see pg. 7- skills rated by importance to post-secondary instructors- skill #6 "Identifying the purpose of a portion of the text")
- ACT. (2006). *ACT National Curriculum Survey 2005-2006.* Iowa City, IA: ACT. (pgs. 44-45, these data have been re-sorted by importance to clarify which skills are most important to post-secondary instructors, see skills #1, #2, #10, #12, #16).
- *Virginia Postsecondary Outreach Campaign and Data Collection, Essential English Skills Analysis.* (see Informational Text 2. Survey of multi-disciplinary faculty teams at 30 higher education institutions; included if average rating is at least 7.5 on a scale of 10)
- *Florida American Diploma Project Survey Results.* (see row 9. Survey of faculty members at 18 public higher education institutions; included if average rating is at least 7.5 on a scale of 10)
- *AP English Language and Composition and English Literature and Composition Course Description* (2008), New York, NY: College Board (see pgs. 51-54, and sample exam expectations for literature beginning on 56).

Career Readiness

- ACT. (2006). *Ready for College and Ready for Work: Same or Different?* Iowa City, IA: ACT. (pgs. 3-5, see Table 2 "Main Ideas and Supporting Details")

Illustrative International Benchmarks

Evidence for Individual Reading, Writing, and Speaking and Listening Standards

- A counterpart of this standard appears in the English language arts standards and learning outcomes from the following high performing countries, as defined by their top 10 ranking on the 2006 Programme of International Student Assessment (PISA) Reading Scale:

  1. **Alberta, Canada:** English Language Arts Curriculum Outcomes, 2003 (Grades 10-12) (see 30.2.1.2.b; 10/20/30.2.3.2.f)
  2. **Finland:** *National Core Curriculum for Upper Secondary Schools* for Mother Tongue and Literature, Finnish as the mother tongue, 2003 (≈ Grades 10-12) (see AI 2.O.1)
  3. **Ontario, Canada:** *The Ontario Curriculum, English,* 2007 (Grades 11-12) (see 1.6, Grade 12 Reading & Literature Studies)

- A counterpart of this standard also appears in the English language arts standards of the following:

  1. **England:** *English Programme of Study for Key stage 4*, 2005 (≈ Grades 10-11) (see 1.4.a)
  2. **Singapore:** *English Language Syllabus 2001*, Learning Outcomes for O-Levels (≈ Grades 10-11) (see 8.1.c)

- Organization for Economic Cooperation and Development. (2006). *PISA 2006: Science Competencies for Tomorrow's World, Vol. 1* (see pg. 293, Reading Proficiency Level 3) (PISA 2006, Vol. 1 full PDF)
- Organization for Economic Cooperation and Development. (2003). *The PISA 2003 Assessment Framework: Mathematics, Reading, Science and Problem Solving Knowledge and Skills. Paris, France: Organization for Economic Cooperation and Development.* (see pgs. 112-115, esp. pg.114 "Retrieving Information," and "Forming a Broad General Understanding")

Illustrative Alignment with State and Other Standards

- *Out of Many, One: Towards Rigorous Common Core Standards from the Ground Up.* (2008). Washington, DC: Achieve. 2008. (see pg. 17, F2- in 12 of 12 states analyzed)
- Intersegmental Committee of the Academic Senates (ICAS). (2002) *Academic Literacy: A Statement of Competencies Expected of Students Entering California's Public Colleges and Universities.* (see Reading Competencies, Comprehension and Retention bullet 6; Reading Competencies, Depth of Understanding bullet 4)
- U.S. Dept. of Education. (2009). *Reading Framework for the National Assessment of Educational Progress 2009.* Washington, DC: National Assessment Governing Board. (see "Locate and Recall", see "Integrate and Interpret")
- A counterpart of this standard appears in the English language arts standards from the following states:

  1. **California:** *English-Language Arts Content Standards for California Public Schools.* (see 2.2.a-e, Writing Applications Grades 11-12)
  2. **Massachusetts:** *English Language Arts Curriculum Framework*, June 2001. (see General Standard 8: Understanding a Text, 8.33, 8.34, General Standard 15: Style and Language, 15.8)

Reading 11. Synthesize data, diagrams, maps, and other visual elements with words in the text to further comprehension.

College Readiness

Evidence for Individual Reading, Writing, and Speaking and Listening Standards

- Achieve, Inc. (2004). *The American Diploma Project, Ready or Not: Creating a High School Diploma that Counts.* Washington, DC: Achieve, Inc. (see sample post-secondary assignment #2, pgs. 92-93; sample post-secondary assignment #3, pgs. 94-97)
- *Virginia Postsecondary Outreach Campaign and Data Collection, Essential English Skills Analysis.* (see Informational Text 5. Survey of multi-disciplinary faculty teams at 30 higher education institutions; included if average rating is at least 7.5 on a scale of 10)
- *Florida American Diploma Project Survey Results.* (see Row 28. Survey of faculty members at 18 public higher education institutions; included if average rating is at least 7.5 on a scale of 10)

Career Readiness

- Achieve, Inc. (2004). *The American Diploma Project, Ready or Not: Creating a High School Diploma that Counts.* Washington, DC: Achieve, Inc. (Workplace Tasks #1-4, pgs. 74-81.)
- *The American Diploma Project Workplace Study.* (2002). Washington, DC: National Alliance of Business. (See point 2, page 12; data gathered through employer feedback from 21 organizations in eight states representing over 10 industries)
- ACT. (2006). *Ready for College and Ready for Work: Same or Different?* Iowa City, IA: ACT. (pgs. 3-5, see Table 3 "Data Representation and Statistical Thinking"- WorkKeys Column, Skill 3)
- *Hawai'i Career Ready Study.* (2007). Commissioned by the Hawai'i P-20 Initiative. (see sample task "Build wall frame and building ramp," Construction/Carpenter; sample task "Draft memo to all employees," Hotel/Guest Services Manager; see also F5 for the occupational tasks for which this skill is important.)

Illustrative International Benchmarks

- A counterpart of this standard appears in the English language arts standards and learning outcomes from the following high performing countries, as defined by their top 10 ranking on the 2006 Programme of International Student Assessment (PISA) Reading Scale:

  1. **British Columbia, Canada**: *English Language Arts Integrated Resource Package*, Prescribed Learning Outcomes, 2007 (Grade 12) (see B12)
  2. **Hong Kong:** *English Language Curriculum and Assessment Guide*, 2007. (≈Grades 10-11) (see Numeracy Skills, Senior Secondary, bullet 2 and 1 and 2)
  3. **Ontario, Canada**: *The Ontario Curriculum, English*, 2007 (Grades 11-12) (see 2.1, Grade 12 Reading and Literature)

- A counterpart of this standard also appears in the English language arts standards of the following :

  1. **Singapore**: *English Language Syllabus 2001*, Learning Outcomes for O-Levels (≈ Grades 10-11) (see 7.a)

- Organization for Economic Cooperation and Development. (2006). *PISA 2006: Science Competencies for Tomorrow's World, Vol. 1* (see pg. 290, example PISA item "Lake Chad," and pg. 288 example PISA item "Labour") (PISA 2006, Vol. 1 full PDF)
- Organization for Economic Cooperation and Development. (2003). *The PISA 2003 Assessment Framework: Mathematics, Reading, Science and Problem Solving Knowledge and Skills.* Paris, France: Organization for Economic Cooperation and Development. (pgs. 110-111, "Non-Continuous Texts")

Evidence for Individual Reading, Writing, and Speaking and Listening Standards

Illustrative Alignment with State and Other Standards

- *Out of Many, One: Towards Rigorous Common Core Standards from the Ground Up.* (2008). Washington, DC: Achieve. 2008. (see pg. 17, F5- in 12 of 12 states analyzed)
- Intersegmental Committee of the Academic Senates (ICAS). (2002) *Academic Literacy: A Statement of Competencies Expected of Students Entering California's Public Colleges and Universities.* (see Reading Competencies bullet 1)
- Conley, D.T. (2003) *Understanding University Success: A Report from Standards for Success.* Eugene, OR: Center for Educational Policy Research. (see I.F.1 and I.F.2)
- U.S. Dept. of Education. (2009). *Reading Framework for the National Assessment of Educational Progress 2009.* Washington, DC: National Assessment Governing Board. (see "Procedural Texts and Documents", see "Integrate and Interpret")
- A counterpart of this standard appears in the English language arts standards from the following states:

  1. **California:** *English-Language Arts Content Standards for California Public Schools* (see 2.1, Reading Comprehension Grades 9-10)

Reading 12. Extract key information efficiently in print and online using text features and search techniques.

College Readiness

- *Virginia Postsecondary Outreach Campaign and Data Collection, Essential English Skills Analysis.* (see Research 2. Survey of multi-disciplinary faculty teams at 30 higher education institutions; included if average rating is at least 7.5 on a scale of 10)
- *Florida American Diploma Project Survey Results.* (see Row 10. Survey of faculty members at 18 public higher education institutions; included if average rating is at least 7.5 on a scale of 10)

Career Readiness

Illustrative International Benchmarks

- A counterpart of this standard appears in the English language arts standards and learning outcomes from the following high performing countries, as defined by their top 10 ranking on the 2006 Programme of International Student Assessment (PISA) Reading Scale:

  1. **Alberta, Canada:** *English Language Arts Curriculum Outcomes*, 2003 (Grades 10-12) (see 10/20/30.3.2.1.b, 10/20/30.2.1.4.a)
  2. **British Columbia, Canada:** *English Language Arts Integrated Resource Package, Prescribed Learning Outcomes*, 2007 (Grade 12) (see B6)
  3. **Finland:** *National Core Curriculum for Upper Secondary Schools* for Mother Tongue and Literature, Finnish as the mother tongue, 2003 (≈ Grades 10-12) (see A1.2.O.4)
- A counterpart of this standard also appears in the English language arts standards of the following :

  1. **Singapore:** *English Language Syllabus 2001*, Learning Outcomes for O-Levels (≈ Grades 10-11) (see 9.1.a, 8.1.b)

Evidence for Individual Reading, Writing, and Speaking and Listening Standards

Illustrative Alignment with State and Other Standards

- A counterpart of this standard appears in the English language arts standards from the following states:

    1. **California:** *English-Language Arts Content Standards for California Public Schools* (see 2.1, Reading Comprehension Grades 9-10)

Reading 13. Ascertain the origin, credibility, and accuracy of print and online sources.

College Readiness

- ACT. (2006). *ACT National Curriculum Survey 2005-2006.* Iowa City, IA: ACT. (pgs. 44-45, these data have been re-sorted by importance to clarify which skills are most important to post-secondary instructors, see skill #5).
- *Virginia Postsecondary Outreach Campaign and Data Collection, Essential English Skills Analysis.* (see Research 3. Survey of multi-disciplinary faculty teams at 30 higher education institutions; included if average rating is at least 7.5 on a scale of 10)
- *Florida American Diploma Project Survey Results.* (see row 18. Survey of faculty members at 18 public higher education institutions; included if average rating is at least 7.5 on a scale of 10)

Career Readiness

- Achieve, Inc. (2004). *The American Diploma Project, Ready or Not: Creating a High School Diploma that Counts.* Washington, DC: Achieve, Inc. (see sample Workplace Task #5, see sample Workplace Task #6, pg. 82-85)
- *The American Diploma Project Workplace Study.* (2002). Washington, DC: National Alliance of Business. (see point 4 on pg. 13; data gathered through employer feedback from 21 organizations in eight states representing over 10 industries)

Illustrative International Benchmarks

- A counterpart of this standard appears in the English language arts standards and learning outcomes from the following high performing countries, as defined by their top 10 ranking on the 2006 Programme of International Student Assessment (PISA) Reading Scale:

    1. **Alberta, Canada:** English Language Arts Curriculum Outcomes, 2003 (Grades 10-12) (see 10/20/30.3.2.2.a, 10/20/30.3.2.2.c, 10/20/30.3.2.2.d)
    2. **Finland:** *National Core Curriculum for Upper Secondary Schools* for Mother Tongue and Literature, Finnish as the mother tongue, 2003 (≈ Grades 10-12) (see AI 2.O.4)
    3. **Ontario, Canada:** *The Ontario Curriculum, English,* 2007 (Grades 11-12) (see 1.5, Grade 12 Writing)

- A counterpart of this standard also appears in the English language arts standards of the following :

    1. **England:** *English Programme of Study for Key stage 4,* 2005 (≈ Grades 10-11) (see 2.2.f)

Evidence for Individual Reading, Writing, and Speaking and Listening Standards

    2. **Singapore:** *English Language Syllabus 2001,* Learning Outcomes for O-Levels (≈ Grades 10-11) (see 9.1.f)

Illustrative Alignment with State and Other Standards

- *Out of Many, One: Towards Rigorous Common Core Standards from the Ground Up.* (2008). Washington, DC: Achieve. 2008. (see pg. 17, E4- in 12 of 12 states analyzed)
- Intersegmental Committee of the Academic Senates (ICAS). (2002) *Academic Literacy: A Statement of Competencies Expected of Students Entering California's Public Colleges and Universities.* (see Writing Competencies – Style/Expression bullet 4 and Technological Competencies bullet 7)
- Conley, D.T. (2003) *Understanding University Success: A Report from Standards for Success.* Eugene, OR: Center for Educational Policy Research. (see III.B.5 and III.B.7*)
- A counterpart of this standard appears in the English language arts standards from the following states:

    1. **California:** *English-Language Arts Content Standards for California Public Schools* (see 2.3, Reading Comprehension, Grades 11-12, 2.4, Writing Applications Grades 11-12)

- U.S. Dept. of Education. (2009). *Reading Framework for the National Assessment of Educational Progress 2009.* Washington, DC: National Assessment Governing Board. (see "Multiple Texts")

Reading 14. Evaluate the reasoning and rhetoric that support an argument or explanation, including assessing whether the evidence provided is relevant and sufficient.

College Readiness

- Achieve, Inc. (2004). *The American Diploma Project, Ready or Not: Creating a High School Diploma that Counts.* Washington, DC: Achieve, Inc. (see sample post-secondary assignment #5, pgs. 100-101)
- Milewski, G.B., Johnsen, D., Glazer, N., & Kubota, M. (2005). *A Survey to Evaluate the Alignment of the New SAT® Writing and Critical Reading Sections to Curricula and Instructional Practices.* New York, NY: College Entrance Examination Board (see pg. 7- skills rated by importance to post-secondary instructors- skill #5 "Distinguish fact from opinion," skill #10 "Identifying logical flaws or discrepancies in an author's argument)
- ACT. (2006). *ACT National Curriculum Survey 2005-2006.* Iowa City, IA: ACT. (pgs. 44-45, these data have been re-sorted by importance to clarify which skills are most important to post-secondary instructors, see skills #5, #8, #9, #12, #17, #18, #20).
- *Virginia Postsecondary Outreach Campaign and Data Collection, Essential English Skills Analysis.* (see Logic 4. Survey of multi-disciplinary faculty teams at 30 higher education institutions; included if average rating is at least 7.5 on a scale of 10)
- *AP English Language and Composition and English Literature and Composition Course Description* (2008), New York, NY: College Board (see pgs. 51-54, and sample exam expectations for literature beginning on 56).

Evidence for Individual Reading, Writing, and Speaking and Listening Standards

- *AP European and World History Course Descriptions* (2009), New York, NY: College Board (see pgs. 21-24 in AP European History for document-based question expectations). AP World and U.S. History also have these expectations.

Career Readiness

- Achieve, Inc. (2004). *The American Diploma Project, Ready or Not: Creating a High School Diploma that Counts.* Washington, DC: Achieve, Inc. (see sample workplace task #6, pg. 84-85)
- *The American Diploma Project Workplace Study.* (2002). Washington, DC: National Alliance of Business. (see point 4 on pg. 13 and point 2 on pg. 18; data gathered through employer feedback from 21 organizations in eight states representing over 10 industries)

Illustrative International Benchmarks

- A counterpart of this standard appears in the English language arts standards and learning outcomes from the following high performing countries, as defined by their top 10 ranking on the 2006 Programme of International Student Assessment (PISA) Reading Scale:

    1. **Alberta, Canada**: English Language Arts Curriculum Outcomes, 2003 (Grades 10-12) (see 30.3.2.2.d, 10/20/30/3.2.2.e)
    2. **British Columbia, Canada**: *English Language Arts Integrated Resource Package*, Prescribed Learning Outcomes, 2007 (Grade 12) (see B9)
    3. **Finland:** *National Core Curriculum for Upper Secondary Schools* for Mother Tongue and Literature, Finnish as the mother tongue, 2003 (≈ Grades 10-12) (see AI 4.CC.1 and 3)
    4. **Hong Kong:** *English Language Curriculum and Assessment Guide*, 2007. (≈Grades 10-11) (see Reading bullets 4, 6, 7 and 13; Critical Thinking bullets 1 and 5)
    5. **Ireland:** *Leaving Certificate/English Syllabus* for Higher Level and Ordinary Level (≈ Grades 10-11) (see 4.2.1.a-c)
    6. **Victoria, Australia:** *Victorian Certificate of Education Study Design: English/English as a Second Language*, 2007 (≈ Grades 11-12) (see Unit 2, Outcome 3, Key Knowledge 1 and Skills 1 and 2; Unit 3, Outcome 2, Key Knowledge 2)

- A counterpart of this standard also appears in the English language arts standards of the following :

    1. **England:** *English Programme of Study for Key stage 4*, 2005 (≈ Grades 10-11) (see 1.4.c and 2.2.f)
    2. **Singapore:** *English Language Syllabus 2001*, Learning Outcomes for O-Levels (≈ Grades 10-11) (see 9.1.e, 7.c)

- Organization for Economic Cooperation and Development. (2006). *PISA 2006: Science Competencies for Tomorrow's World, Vol. 1* (See pg. 289, example PISA item "Graffiti") (PISA 2006, Vol. 1 full PDF)
- Organization for Economic Cooperation and Development. (2003). *The PISA 2003 Assessment Framework: Mathematics, Reading, Science and Problem Solving Knowledge and Skills.* Paris, France: Organization for Economic Cooperation and Development. (pg. 115, "Reflecting on and Evaluating the Content of a Text")

Illustrative Alignment with State and Other Standards

Evidence for Individual Reading, Writing, and Speaking and Listening Standards

- *Out of Many, One: Towards Rigorous Common Core Standards from the Ground Up.* (2008). Washington, DC: Achieve. 2008. (see pg. 17, E4– in 12 of 12 states analyzed)
- Intersegmental Committee of the Academic Senates (ICAS). (2002) *Academic Literacy: A Statement of Competencies Expected of Students Entering California's Public Colleges and Universities.* (see Fostering Habits of Mind Essential for Success bullet 5)
- Conley, D.T. (2003) *Understanding University Success: A Report from Standards for Success.* Eugene, OR: Center for Educational Policy Research. (see III.B.7*)
- A counterpart of this standard appears in the English language arts standards from the following states:

    1. **California:** *English-Language Arts Content Standards for California Public Schools* (see Reading 2.8, grades 9-10; Reading 2.6, grades 11-12)
    2. **Massachusetts:** *English Language Arts Curriculum Framework*, June 2001. (see 8.31 and 8.34, and 13.24, 13.26; and General Standard 13: Nonfiction)

- U.S. Dept. of Education. (2009). *Reading Framework for the National Assessment of Educational Progress 2009.* Washington, DC: National Assessment Governing Board. (see Proficient bullet 5 and Advanced bullets 1, 3 and 5 – Informational, see "Critique and Evaluate")

Reading 15. Analyze how two or more texts with different styles, points of view, or arguments address similar topics or themes.

College Readiness

- Milewski, G.B., Johnsen, D., Glazer, N., & Kubota, M. (2005). *A Survey to Evaluate the Alignment of the New SAT® Writing and Critical Reading Sections to Curricula and Instructional Practices.* New York, NY: College Entrance Examination Board (see pg. 7- skills rated by importance to post-secondary instructors- skill #19 "Comparing and contrasting two texts")
- ACT. (2006). *ACT National Curriculum Survey 2005-2006.* Iowa City, IA: ACT. (pgs. 44-45, these data have been re-sorted by importance to clarify which skills are most important to post-secondary instructors, see skill #25).
- *AP English Language and Composition and English Literature and Composition Course Description* (2008), New York, NY: College Board (see pgs. 51-54, and sample exam expectations for literature beginning on 56).
- *AP European and World History Course Descriptions* (2009), New York, NY: College board (see pgs. 21-24 in AP European History for document-based question expectations). AP World and U.S. History also have these expectations.
- *Florida American Diploma Project Survey Results.* (see row 23. Survey of faculty members at 18 public higher education institutions; included if average rating is at least 7.5 on a scale of 10)

Career Readiness

Illustrative International Benchmarks

- A counterpart of this standard appears in the English language arts standards and learning outcomes from the following high performing countries, as defined by their top 10 ranking on the 2006 Programme of International Student Assessment (PISA) Reading Scale:

    1. **Ireland:** *Leaving Certificate/English Syllabus* for Higher Level and Ordinary Level (≈ Grades 10-11) (see 5.5.d, Ordinary; 4.4.1.f and 5.4.d, Higher)

2. **New South Wales, Australia:** *English Stage 6 Syllabus,* 1999 (Grades 11-12) (see Outcome 2; C-2, 2.1, 2.2, 2.3, Preliminary; C-1.1, C-2, 2.1, 2.2, 2.3, HSC)
3. **Ontario, Canada:** *The Ontario Curriculum, English,* 2007 (Grades 11-12) (see 1.6, Grade 12 Oral Communication)

- A counterpart of this standard also appears in the English language arts standards of the following :

  1. **England:** *English Programme of Study for Key stage 4,* 2005 (≈ Grades 10-11) (see 2.2.m and 2.2.n, 1.4.b)

- Organization for Economic Cooperation and Development. (2003). *The PISA 2003 Assessment Framework: Mathematics, Reading, Science and Problem Solving Knowledge and Skills.* Paris, France: Organization for Economic Cooperation and Development. (pg. 115, "Developing an Interpretation")

Illustrative Alignment with State and Other Standards

- Intersegmental Committee of the Academic Senates (ICAS). (2002) *Academic Literacy: A Statement of Competencies Expected of Students Entering California's Public Colleges and Universities.* (see Making the Reading/Writing Connection bullet 4)
- Conley, D.T. (2003) *Understanding University Success: A Report from Standards for Success.* Eugene, OR: Center for Educational Policy Research. (see I.C.5)
- A counterpart of this standard appears in the English language arts standards from the following states:

  1. **California:** *English-Language Arts Content Standards for California Public Schools* (see 3.5, Reading Comprehension grades 9-10, 2.4.b Writing Applications Grades 11-12)
  2. **Massachusetts:** *English Language Arts Curriculum Framework,* June 2001. (see 10.5, 11.7, 15.10)

- U.S. Dept. of Education. (2009). *Reading Framework for the National Assessment of Educational Progress 2009.* Washington, DC: National Assessment Governing Board. (see Advanced - Literary bullet 4, see "Multiple Texts", see"Integrate and Interpret")

Reading 16. Draw upon relevant prior knowledge to enhance comprehension, and note when the text expands on or challenges that knowledge.

College Readiness

Career Readiness

Illustrative International Benchmarks

- A counterpart of this standard appears in the English language arts standards and learning outcomes from the following high performing countries, as defined by their top 10 ranking on the 2006 Programme of International Student Assessment (PISA) Reading Scale:

  1. **Alberta, Canada:** *English Language Arts Curriculum Outcomes,* 2003 (Grades 10-12) (see 10/20/30.2.1.3.a , 20.2.1.3.a, 30.2.1.3.b, 30.3.2.3.a, 10/20/30.2.1.1.d)

Evidence for Individual Reading, Writing, and Speaking and Listening Standards

2. **British Columbia, Canada:** *English Language Arts Integrated Resource Package, Prescribed Learning Outcomes,* 2007 (Grade 12) (see B5)
3. **Ontario, Canada:** *The Ontario Curriculum,* English, 2007 (see 1.2 and 1.5 Grade 12 Reading & Literature Studies)

- A counterpart of this standard also appears in the English language arts standards of the following :

  1. **Singapore:** *English Language Syllabus 2001,* Learning Outcomes for O-Levels (≈ Grades 10-11) (see 7.e, 8.1.d and 8.2.e)

Illustrative Alignment with State and Other Standards

- Intersegmental Committee of the Academic Senates (ICAS). (2002) *Academic Literacy: A Statement of Competencies Expected of Students Entering California's Public Colleges and Universities.* (see Making the Reading/Writing Connection bullet 3)

Reading 17. Apply knowledge and concepts gained through reading to build a more coherent understanding of a subject, inform reading of additional texts, and to solve problems.

College Readiness

- *AP English Language and Composition and English Literature and Composition Course Description* (2008), New York, NY: College Board (see pgs. 51-54, and sample exam expectations for literature beginning on 56).
- *AP European and World History Course Descriptions* (2009), New York, NY: College board (see pgs. 21-24 in AP European History for document-based question expectations). AP World and U.S. History also have these expectations.
- ACT. (2006). *ACT National Curriculum Survey 2005-2006.* Iowa City, IA: ACT. (pgs. 44-45, these data have been re-sorted to clarify which skills are most important to post-secondary instructors, see skill #9, #22, #23, #25).

Career Readiness

- ACT. (2006). *Ready for College and Ready for Work: Same or Different?* Iowa City, IA: ACT. (pgs. 3-5, see Table 2, "Sequential, Comparative, and Cause-Effect Relationships," WorkKeys Column, Points 1 and 2)
- ACT (2009) See ACT WorkKeys "Reading for Information" Level 5 requirements (Level 5 is workplace training and college ready).
- *The American Diploma Project Workplace Study.* (2002). Washington, DC: National Alliance of Business. (See point 1, page 12; data gathered through employer feedback from 21 organizations in eight states representing over 10 industries)

Illustrative International Benchmarks

- A counterpart of this standard appears in the English language arts standards and learning outcomes from the following high performing countries, as defined by their top 10 ranking on the 2006 Programme of International Student Assessment (PISA) Reading Scale:

Evidence for Individual Reading, Writing, and Speaking and Listening Standards

1. **Ontario, Canada:** *The Ontario Curriculum, English*, 2007 (Grades 11-12) (see 1.6, Grade 12 Oral Communication)

- A counterpart of this standard also appears in the English language arts standards of the following :

  1. **England:** *English Programme of Study for Key stage 4*, 2005 (≈ Grades 10-11) (see 2.2.e)
  2. **Singapore:** *English Language Syllabus 2001,* Learning Outcomes for O-Levels (≈ Grades 10-11) (see 9.2.f)

Illustrative Alignment with State and Other Standards

- *Out of Many, One: Towards Rigorous Common Core Standards from the Ground Up.* (2008). Washington, DC: Achieve. (see pg. 17, E8– in 10 of 12 states analyzed)
- A counterpart of this standard appears in the English language arts standards from the following states:

  1. **California:** *English-Language Arts Content Standards for California Public Schools* (2.3, Reading Comprehension Grades 11-12)

Reading 18. Demonstrate facility with the specific reading demands of texts drawn from different disciplines, including history, literature, science, and mathematics.

Disciplinary Literacy Research

The following are a few seminal works of research on disciplinary literacy, which is at the heart of this standard. The sources below cannot be categorized as college or career readiness materials or evidence from a set of standards. Rather, it is general research that provides insight into the field of disciplinary literacy.

- Carnegie Council on Advancing Adolescent Literacy. (2010). *Time to act: An agenda for advancing adolescent literacy for college and career success*. New York, NY: Carnegie Corporation of New York.
- Fang, Z., & Schleppegrell, M. J. (2008). *Reading in secondary content areas.* Ann Arbor: University of Michigan Press.
- Lee, C.D., Spratley, A. (2010). *Reading in the disciplines: The challenges of adolescent literacy*. New York, NY: Carnegie Corporation of New York.
- Moje, E. B., Young, J. P., Readence, J. E., & Moore, D. W. (2000). Reinventing adolescent literacy for new times: Perennial and millennial issues. *Journal of Adolescent and Adult Literacy, 43*, 400–410.
- Schleppegrell, M. J. (2004). *The language of schooling: A functional linguistics perspective.* Mahwah, NJ: Lawrence Erlbaum Associates.
- Shanahan, T., & Shanahan, C. (2008). Teaching disciplinary literacy to adolescents: Rethinking content-area literacy. *Harvard Educational Review, 78,* 40–59.

Evidence for Individual Reading, Writing, and Speaking and Listening Standards

Writing Evidence

Writing 1. Establish and refine a topic or thesis that addresses the specific task and audience.

College Readiness

- Milewski, G.B., Johnsen, D., Glazer, N., & Kubota, M. (2005). *A Survey to Evaluate the Alignment of the New SAT® Writing and Critical Reading Sections to Curricula and Instructional Practices*. New York, NY: College Board (see pgs. 10 and 12, these data have been sorted by importance to clarify which skills are most important to post-secondary instructors, see skills #12, #37).
- *AP English Language and Composition and English Literature and Composition Course Description* (2008), New York, NY: College Board (see pg. 11 for course expectations).
- *AP European History Course Description* (2009), New York, NY: College board (see pp. 21-24 for document-based question expectations). AP World and US History also have these expectations.
- ACT (2006). *ACT National Curriculum Survey 2005-2006*. Iowa City, IA: ACT. (pgs. 39-40, these data have been re-sorted by importance to clarify which skills are most important to post-secondary instructors, see skills #15, #23).
- *Virginia Postsecondary Outreach Campaign and Data Collection, Essential English Skills Analysis*. (see Research 1 and Writing 3; survey of multi-disciplinary faculty teams at 30 higher education institutions; included if average rating is at least 7.5 on a scale of 10)
- *Florida American Diploma Project Survey Results*. (see rows 5 and 12; survey of faculty members at 18 public higher education institutions; included if average rating is at least 7.5 on a scale of 10)

Career Readiness

- *The American Diploma Project Workplace Study*. (2002). Washington, DC: National Alliance of Business. (see point *b* on pg. 24; data gathered through employer feedback from 21 organizations in eight states representing over 10 industries)

Illustrative International Benchmarks

- A counterpart of this standard appears in the English language arts standards and learning outcomes from the following high performing countries, as defined by their top 10 ranking on the 2006 Programme of International Student Assessment (PISA) Reading Scale:

  1. **Alberta, Canada:** English Language Arts Curriculum Outcomes, 2003 (Grades 10-12) (see 30.3.1.1.a and 10/20/30.3.1.1.c)
  2. **Finland:** *National Core Curriculum for Upper Secondary Schools* for Mother Tongue and Literature, Finnish as the mother tongue, 2003 (≈ Grades 10-12) (see AI 5.O.3 and AI 8.CC.3)
  3. **Ontario, Canada:** *The Ontario Curriculum, English*, 2007 (Grades 11-12) (see 1.1 and 1.2, Grade 12 Writing)

- A counterpart of this standard also appears in the English language arts standards of the following :

  1. **Singapore:** *English Language Syllabus 2001,* Learning Outcomes for O-Levels (≈ Grades 10-11) (see 4.b)

Evidence for Individual Reading, Writing, and Speaking and Listening Standards

Illustrative Alignment with State and Other Standards

- *Intersegmental Committee of the Academic Senates (ICAS).* (2002) Academic Literacy: A Statement of Competencies Expected of Students Entering California's Public Colleges and Universities. (see Writing Competencies, Invention, bullet 4)
- Conley, D.T. (2003) *Understanding University Success: A Report from Standards for Success.* Eugene, OR: Center for Educational Policy Research. (see II.E.1 & III.A.1)
- A counterpart of this standard appears in the English language arts standards from the following states:

  1. **California**: *English-Language Arts Content Standards for California Public Schools*, 1997. (1.0, Writing Strategies Grades 11-12)
  2. **Massachusetts:** *English Language Arts Curriculum Framework*, June 2001. (see General Standard 19: Writing, 19.26, 19.27, 19.30)

Writing 2. Gather the information needed to build an argument, provide an explanation, or address a research question.

College Readiness

- *Virginia Postsecondary Outreach Campaign and Data Collection, Essential English Skills Analysis.* (See Research 2; survey of multi-disciplinary faculty teams at 30 higher education institutions; included if average rating is at least 7.5 on a scale of 10)
- *Florida American Diploma Project Survey Results.* (see row 10; survey of faculty members at 18 public higher education institutions; included if average rating is at least 7.5 on a scale of 10)

Career Readiness

- *The American Diploma Project Workplace Study.* (2002). Washington, DC: National Alliance of Business. (see pgs. 22-25; data gathered through employer feedback from 21 organizations in eight states representing over 10 industries)

Illustrative International Benchmarks

- A counterpart of this standard appears in the English language arts standards and learning outcomes from the following high performing countries, as defined by their top 10 ranking on the 2006 Programme of International Student Assessment (PISA) Reading Scale:

  1. **Alberta, Canada:** English Language Arts Curriculum Outcomes, 2003 (Grades 10-12) (see 10/20/30.3.2.1.b)
  2. **British Columbia, Canada:** *English Language Arts Integrated Resource Package,* Prescribed Learning Outcomes, 2007 (Grade 12) (see C6)
  3. **Finland:** *National Core Curriculum for Upper Secondary Schools* for Mother Tongue and Literature, Finnish as the mother tongue, 2003 (≈ Grades 10-12) (see AI 2.O.4 and AI 2.CC.3; AI 5.O.3)
  4. **New South Wales, Australia:** *English Stage 6 Syllabus*, 1999 (Grades 11-12) (see C-10.3, HSC)
  5. **Ontario, Canada:** *The Ontario Curriculum, English*, 2007 (Grades 11-12) (see 1.3, Grade 12 Writing)

- A counterpart of this standard also appears in the English language arts standards of the following :

Evidence for Individual Reading, Writing, and Speaking and Listening Standards

  1. **England:** *English Programme of Study for Key stage 4*, 2005 (≈ Grades 10-11) (see 2.3.h)

Illustrative Alignment with State and Other Standards

- Intersegmental Committee of the Academic Senates (ICAS). (2002) *Academic Literacy: A Statement of Competencies Expected of Students Entering California's Public Colleges and Universities.* (see Making the Reading/Writing Connection, bullet 6)
- Conley, D.T. (2003) *Understanding University Success: A Report from Standards for Success.* Eugene, OR: Center for Educational Policy Research. (see III.A.2, III.B)

Writing 3. Sustain focus on a specific topic or argument.

College Readiness

- Milewski, G.B., Johnsen, D., Glazer, N., & Kubota, M. (2005). *A Survey to Evaluate the Alignment of the New SAT® Writing and Critical Reading Sections to Curricula and Instructional Practices.* New York, NY: College Board (see pgs. 10 and 12, these data have been sorted by importance to clarify which skills are most important to post-secondary instructors, see skills #1, #3, #12).
- *AP English Language and Composition and English Literature and Composition Course Description* (2008), New York, NY: College Board (see pg. 11 for course expectations).
- ACT (2006). *ACT National Curriculum Survey 2005-2006.* Iowa City, IA: ACT. (pgs. 39-40, these data have been re-sorted by importance to clarify which skills are most important to post-secondary instructors, see skill #1).

Career Readiness

Illustrative International Benchmarks

- A counterpart of this standard appears in the English language arts standards and learning outcomes from the following high performing countries, as defined by their top 10 ranking on the 2006 Programme of International Student Assessment (PISA) Reading Scale:

  1. **Alberta, Canada:** English Language Arts Curriculum Outcomes, 2003 (Grades 10-12) (see 10/20/30.4.1.3.c and 20.4.1.3.e; 20/30.4.2.1.a; 10/20.4.2.2.d)
  2. **Finland:** *National Core Curriculum for Upper Secondary Schools* for Mother Tongue and Literature, Finnish as the mother tongue, 2003 (≈ Grades 10-12) (see AI 8.O.2)
  3. **Victoria, Australia:** *Victorian Certificate of Education Study Design: English/English as a Second Language*, 2007 (≈ Grades 11-12) (see Unit 4, Outcome 1, Key Skill 1)

- A counterpart of this standard also appears in the English language arts standards of the following:

  1. **England:** *English Programme of Study for Key stage 4*, 2005 (≈ Grades 10-11) (see 2.3.d-e)
  2. **Singapore:** *English Language Syllabus 2001*, Learning Outcomes for O-Levels (≈ Grades 10-11) (see 4.b; 4.e; 5.b)

Evidence for Individual Reading, Writing, and Speaking and Listening Standards

Illustrative Alignment with State and Other Standards

- U.S. Dept. of Education. (2007). *Writing Framework for the 2011 National Assessment of Educational Progress*. Washington, DC: National Assessment Governing Board. (see Holistic Scoring Guides Level 6 "To Persuade"; "To Explain"; "To Convey Experience")
- A counterpart of this standard appears in the English language arts standards from the following states:

  1. **California**: *English-Language Arts Content Standards for California Public Schools*, 1997. (see 1.3, Writing Strategies Grades 11-12)
  2. **Massachusetts**, *English Language Arts Curriculum Framework*, June 2001. (see General Standard 19: Writing, 19.26, 19.27, 19.30)

Writing 4. Support and illustrate arguments and explanations with relevant details, examples, and evidence.

College Readiness

- Milewski, G.B., Johnsen, D., Glazer, N., & Kubota, M. (2005). *A Survey to Evaluate the Alignment of the New SAT® Writing and Critical Reading Sections to Curricula and Instructional Practices*. New York, NY: College Board (see pgs. 10 and 12, these data have been sorted by importance to clarify which skills are most important to post-secondary instructors, see skills #1, #2, #3, #4).
- *AP English Language and Composition and English Literature and Composition Course Description* (2008), New York, NY: College Board (see pg. 11 for course expectations).
- ACT (2006). *ACT National Curriculum Survey 2005-2006*. Iowa City, IA: ACT. (pgs. 39-40, these data have been re-sorted by importance to clarify which skills are most important to post-secondary instructors, see skill #3).

Career Readiness

Illustrative International Benchmarks

- A counterpart of this standard appears in the English language arts standards and learning outcomes from the following high performing countries, as defined by their top 10 ranking on the 2006 Programme of International Student Assessment (PISA) Reading Scale:

  1. **Alberta, Canada:** English Language Arts Curriculum Outcomes, 2003 (Grades 10-12) (see 30.4.1.3.e and 20/30.4.1.3.g)
  2. **British Columbia, Canada:** *English Language Arts Integrated Resource Package*, Prescribed Learning Outcomes, 2007 (Grade 12) (see C7; C8)
  3. **Finland:** *National Core Curriculum for Upper Secondary Schools* for Mother Tongue and Literature, Finnish as the mother tongue, 2003 (≈ Grades 10-12) (see AI.2.CC.3)
  4. **Hong Kong:** *English Language Curriculum and Assessment Guide, 2007*. (≈Grades 10-11) (see bullet 4, Writing)
  5. **Ontario, Canada:** *The Ontario Curriculum, English,* 2007 (Grades 11-12) (see 1.4 & 1.5, Grade 12 Writing)
  6. **Victoria, Australia:** *Victorian Certificate of Education Study Design: English/English as a Second Language,* 2007 (≈ Grades 11-12) (see Unit 1, Outcome 2, Key Skill 3; Unit 4, Outcome 1, Key Skill 1)

Evidence for Individual Reading, Writing, and Speaking and Listening Standards

- A counterpart of this standard also appears in the English language arts standards of the following:

  1. **England:** *English Programme of Study for Key stage 4*, 2005 (≈ Grades 10-11) (see 2.3.h)
  2. **Singapore:** *English Language Syllabus 2001*, Learning Outcomes for O-Levels (≈ Grades 10-11) (see 4.b-c and 5.c; 9.1.d)

Illustrative Alignment with State and Other Standards

- U.S. Dept. of Education. (2011). *Writing Framework for the 2011 National Assessment of Educational Progress*. Washington, DC: National Assessment Governing Board. (see Proficient Achievement Level, Grade 12, box 3, Holistic Scoring Guides Level 6 "to Persuade"; "To Explain"; "To Convey Experience")
- Intersegmental Committee of the Academic Senates (ICAS). (2002) *Academic Literacy: A Statement of Competencies Expected of Students Entering California's Public Colleges and Universities*. (see Writing Competencies, Arrangement, bullet 1; Fostering Habits of Mind Essential for Success, bullet 16)
- Conley, D.T. (2003) *Understanding University Success: A Report from Standards for Success*. Eugene, OR: Center for Educational Policy Research. (see II.E.2 and IV.B.2)
- A counterpart of this standard appears in the English language arts standards from the following states:

  1. **California**: English-Language Arts Content Standards for California Public Schools, 1997. (see 1.3, Writing Strategies Grades 11-12)
  2. **Massachusetts**, English Language Arts Curriculum Framework, June 2001. (see General Standard 19: Writing, 19.26, 19.27, 19.30)

Writing 5. Create a logical progression of ideas or events, and convey the relationships among them.

College Readiness

- Milewski, G.B., Johnsen, D., Glazer, N., & Kubota, M. (2005). *A Survey to Evaluate the Alignment of the New SAT® Writing and Critical Reading Sections to Curricula and Instructional Practices*. New York, NY: College Board (see pgs. 10 and 12, these data have been sorted by importance to clarify which skills are most important to post-secondary instructors, see skills #1, #3, #7, #9, #21, #26).
- *AP English Language and Composition and English Literature and Composition Course Description* (2008), New York, NY: College Board (see pg. 11 for course expectations).
- ACT (2006). *ACT National Curriculum Survey 2005-2006*. Iowa City, IA: ACT. (pgs. 39-40, these data have been re-sorted by importance to clarify which skills are most important to post-secondary instructors, see skills #1, #4, #9, #12, #17, #19, #22, #29, #30).

Career Readiness

- ACT (2009) See ACT WorkKeys Writing Level 3 requirements (Level 3 is workplace training and college ready).

Illustrative International Benchmarks

Evidence for Individual Reading, Writing, and Speaking and Listening Standards

- A counterpart of this standard appears in the English language arts standards and learning outcomes from the following high performing countries, as defined by their top 10 ranking on the 2006 Programme of International Student Assessment (PISA) Reading Scale:

  1. **Alberta, Canada:** English Language Arts Curriculum Outcomes, 2003 (Grades 10-12) (see 10/20/30.3.2.1.d; 20/30.4.2.2.b; 10/20.4.2.2.d-e)
  2. **British Columbia, Canada:** *English Language Arts Integrated Resource Package*, Prescribed Learning Outcomes, 2007 (Grade 12) (see C6; C13)
  3. **Finland:** *National Core Curriculum for Upper Secondary Schools* for Mother Tongue and Literature, Finnish as the mother tongue, 2003 (≈ Grades 10-12) (see AI 5.O.3; AI 8.O.2; AI 8.CC.3)
  4. **Hong Kong:** *English Language Curriculum and Assessment Guide*, 2007. (≈Grades 10-11) (see bullets 1-3 and 8-9, Writing; bullet 2, Senior Secondary)
  5. **New South Wales, Australia:** *English Stage 6 Syllabus*, 1999 (Grades 11-12) (see 9.2 Preliminary)
  6. **Ontario, Canada:** *The Ontario Curriculum, English*, 2007 (Grades 11-12) (see 1.4, 2.6, Grade 12 Writing)
  7. **Victoria, Australia:** *Victorian Certificate of Education Study Design: English/English as a Second Language*, 2007 (≈ Grades 11-12) (see Unit 2, Outcome 2, Key Skill 5)

- A counterpart of this standard also appears in the English language arts standards of the following:

  1. **England:** *English Programme of Study for Key stage 4*, 2005 (≈ Grades 10-11) (see 2.3.c; 2.3.e-f)
  2. **Singapore:** *English Language Syllabus 2001*, Learning Outcomes for O-Levels (≈ Grades 10-11) (See 4.a-b; 4.e-f; 5.b; 5.g)

Illustrative Alignment with State and Other Standards

- *Out of Many, One: Towards Rigorous Common Core Standards from the Ground Up*. (2008). Washington, DC: Achieve. 2008. (see C3 - in 12 of 12 states analyzed)
- U.S. Dept. of Education. (2011). *Writing Framework for the 2011 National Assessment of Educational Progress*. Washington, DC: National Assessment Governing Board. (see Advanced Achievement Level, Grade 12, box three, Holistic Scoring Guides Level 6 "to Persuade"; "To Explain"; "To Convey Experience")
- Intersegmental Committee of the Academic Senates (ICAS). (2002) *Academic Literacy: A Statement of Competencies Expected of Students Entering California's Public Colleges and Universities*. (see Writing Competencies, Arrangement, bullets 3 and 4)
- Conley, D.T. (2003) *Understanding University Success: A Report from Standards for Success*. Eugene, OR: Center for Educational Policy Research. (see II.D.2 and II.D.4, II.F.2)
- A counterpart of this standard appears in the English language arts standards from the following states:

  1. **California**: *English-Language Arts Content Standards for California Public Schools*, 1997. (See 1.3, Writing Strategies Grades 11-12)
  2. **Massachusetts**: *English Language Arts Curriculum Framework*, June 2001. (see General Standard 19: Writing, 19.26, 19.27, 19.30; General Standard 23: Organizing Ideas in Writing, 23.13, 23.14, 23.15)

Writing 6. Choose words and phrases to express ideas precisely and concisely.

Evidence for Individual Reading, Writing, and Speaking and Listening Standards

College Readiness

- Milewski, G.B., Johnsen, D., Glazer, N., & Kubota, M. (2005). *A Survey to Evaluate the Alignment of the New SAT® Writing and Critical Reading Sections to Curricula and Instructional Practices*. New York, NY: College Board (see pgs. 10 and 12, these data have been sorted by importance to clarify which skills are most important to post-secondary instructors, see skills #1, #5, #27).
- *AP English Language and Composition and English Literature and Composition Course Description* (2008), New York, NY: College Board (see pg. 11 for course expectations).
- ACT (2006). *ACT National Curriculum Survey 2005-2006*. Iowa City, IA: ACT. (pgs. 39-40, these data have been re-sorted by importance to clarify which skills are most important to post-secondary instructors, see skill #28).
- *Virginia Postsecondary Outreach Campaign and Data Collection, Essential English Skills Analysis*. (see Language 6 and Writing 2; survey of multi-disciplinary faculty teams at 30 higher education institutions; included if average rating is at least 7.5 on a scale of 10)

Career Readiness

Illustrative International Benchmarks

- A counterpart of this standard appears in the English language arts standards and learning outcomes from the following high performing countries, as defined by their top 10 ranking on the 2006 Programme of International Student Assessment (PISA) Reading Scale:

  1. **Alberta, Canada:** English Language Arts Curriculum Outcomes, 2003 (Grades 10-12) (see 20/30.4.2.3.b)
  2. **British Columbia, Canada:** *English Language Arts Integrated Resource Package*, Prescribed Learning Outcomes, 2007 (Grades 11-12) (see C12)
  3. **Finland:** *National Core Curriculum for Upper Secondary Schools* for Mother Tongue and Literature, Finnish as the mother tongue, 2003 (≈ Grades 10-12) (see AI 2.CC.1, AI 5.CC.3)
  4. **Hong Kong:** *English Language Curriculum and Assessment Guide*, 2007. (≈Grades 10-11) (see bullet 9, Writing; point 5, Senior Secondary)
  5. **Ontario, Canada:** *The Ontario Curriculum, English*, 2007 (Grades 11-12) (see 2.3, Grade 12 Writing)

Illustrative Alignment with State and Other Standards

- *Out of Many, One: Towards Rigorous Common Core Standards from the Ground Up*. (2008). Washington, DC: Achieve. 2008. (see C2- in 12 of 12 states analyzed)
- U.S. Dept. of Education. (2011). *Writing Framework for the 2011 National Assessment of Educational Progress*. Washington, DC: National Assessment Governing Board. (see Advanced Achievement Level, Grade 12, box 5; Holistic Scoring Guides Level 6 "to Persuade"; "To Explain"; "To Convey Experience")
- Intersegmental Committee of the Academic Senates (ICAS). (2002) *Academic Literacy: A Statement of Competencies Expected of Students Entering California's Public Colleges and Universities*. (Writing Competencies, Style/Expression, bullet 1)
- Conley, D.T. (2003) *Understanding University Success: A Report from Standards for Success*. Eugene, OR: Center for Educational Policy Research. (see II.D.5 & II.E.5)
- A counterpart of this standard appears in the English language arts standards from the following states:

Evidence for Individual Reading, Writing, and Speaking and Listening Standards

1. **California**: *English-Language Arts Content Standards for California Public Schools*, 1997. (see 1.5, Writing Strategies Grades 11-12)
2. **Massachusetts**: *English Language Arts Curriculum Framework*, June 2001. (see General Standard 21: Revising, 21.8, 21.9)

Writing 7. Use varied sentence structures to engage the reader and achieve cohesion between sentences.

College Readiness

Career Readiness

Illustrative International Benchmarks

- A counterpart of this standard appears in the English language arts standards and learning outcomes from the following high performing countries, as defined by their top 10 ranking on the 2006 Programme of International Student Assessment (PISA) Reading Scale:

  1. **Alberta, Canada:** English Language Arts Curriculum Outcomes, 2003 (Grades 10-12) (see 20/30.4.2.3.c; 20/30.4.2.4.f)
  2. **British Columbia, Canada:** *English Language Arts Integrated Resource Package*, Prescribed Learning Outcomes, 2007 (Grade 12) (see C12)
  3. **Ireland:** *Leaving Certificate/English Syllabus* for Higher Level and Ordinary Level (≈ Grades 10-11) (see 5.3)
  4. **Ontario, Canada:** *The Ontario Curriculum, English*, 2007 (Grades 11-12) (see 2.4, Grade 12 Writing)

- A counterpart of this standard also appears in the English language arts standards of the following:

  1. **England:** *English Programme of Study for Key stage 4*, 2005 (≈ Grades 10-11) (see 2.3.g, 2.3.m)

Illustrative Alignment with State and Other Standards

- U.S. Dept. of Education. (2007). *Writing Framework for the 2011 National Assessment of Educational Progress.* Washington, DC: National Assessment Governing Board. (see Holistic Scoring Guides Level 6, bullet 4 "to Persuade"; "To Explain"; "To Convey Experience"; Advanced Achievement Level, Grade 12, box four)
- Intersegmental Committee of the Academic Senates (ICAS). (2002) *Academic Literacy: A Statement of Competencies Expected of Students Entering California's Public Colleges and Universities.* (see Writing Competencies, Style/Expression, bullet 1)
- Conley, D.T. (2003) *Understanding University Success: A Report from Standards for Success*. Eugene, OR: Center for Educational Policy Research. (see II.D.3)
- A counterpart of this standard appears in the English language arts standards from the following states:

  1. **California:** *English-Language Arts Content Standards for California Public Schools*, 1997. (see 1.1, Written and Oral Language Conventions Grades 11-12)
  2. **Massachusetts:** *English Language Arts Curriculum Framework*, June 2001. (see 19.26, 19.27)

Evidence for Individual Reading, Writing, and Speaking and Listening Standards

Writing 8. Develop and maintain a style and tone appropriate to the task, purpose, and audience.

College Readiness

- Milewski, G.B., Johnsen, D., Glazer, N., & Kubota, M. (2005). *A Survey to Evaluate the Alignment of the New SAT® Writing and Critical Reading Sections to Curricula and Instructional Practices*. New York, NY: College Board (see pgs. 10 and 12, these data have been sorted by importance to clarify which skills are most important to post-secondary instructors, see skills #3, #12, #23, #37).
- *AP English Language and Composition and English Literature and Composition Course Description* (2008), New York, NY: College Board (see pg. 11 for course expectations).
- ACT (2006). *ACT National Curriculum Survey 2005-2006*. Iowa City, IA: ACT. (pgs. 39-40, these data have been re-sorted by importance to clarify which skills are most important to post-secondary instructors, see skills #15, #20).
- *Virginia Postsecondary Outreach Campaign and Data Collection, Essential English Skills Analysis*. (see Writing 2 and 5; survey of multi-disciplinary faculty teams at 30 higher education institutions; included if average rating is at least 7.5 on a scale of 10)
- *Florida American Diploma Project Survey Results*. (see rows 22 and 26; survey of faculty members at 18 public higher education institutions; included if average rating is at least 7.5 on a scale of 10)

Career Readiness

- *Hawai'i Career Ready Study*. (2007). Commissioned by the Hawai'i P-20 Initiative. (see pgs. 36-38 sample task "Draft memo to all employees," Hotel/Guest Services Manager)
- ACT (2009) See ACT WorkKeys Writing Level 3 requirements (Level 3 is workplace training and college ready).

Illustrative International Benchmarks

- A counterpart of this standard appears in the English language arts standards and learning outcomes from the following high performing countries, as defined by their top 10 ranking on the 2006 Programme of International Student Assessment (PISA) Reading Scale:

  1. **Alberta, Canada:** English Language Arts Curriculum Outcomes, 2003 (Grades 10-12) (see 20.4.1.1.c; 10/20/30.4.2.3.a and 20.4.2.3.d)
  2. **British Columbia, Canada:** *English Language Arts Integrated Resource Package*, Prescribed Learning Outcomes, 2007 (Grades 11-12) (see C12)
  3. **Finland:** *National Core Curriculum for Upper Secondary Schools* for Mother Tongue and Literature, Finnish as the mother tongue, 2003 (≈ Grades 10-12) (see AI 2.CC.1; AI 5.O.3; AI 8.CC.3)
  4. **Hong Kong:** *English Language Curriculum and Assessment Guide*, 2007. (≈Grades 10-11) (See bullets 9 and 12, Writing)
  5. **Ontario, Canada:** *The Ontario Curriculum, English*, 2007 (Grades 11-12) (see 2.2, Grade 12 Writing)
  6. **Victoria, Australia:** *Victorian Certificate of Education Study Design: English/English as a Second Language*, 2007 (≈ Grades 11-12) (see Unit 1, Outcome 2, Key Knowledge 4; Unit 3, Outcome 2, Key Knowledge 1)

Evidence for Individual Reading, Writing, and Speaking and Listening Standards

- A counterpart of this standard also appears in the English language arts standards of the following :

    1. **England:** *English Programme of Study for Key stage 4*, 2005 (≈ Grades 10-11) (see 2.3.b)
    2. **Singapore:** *English Language Syllabus 2001*, Learning Outcomes for O-Levels (≈ Grades 10-11) (see 5.e and 5.g)

Illustrative Alignment with State and Other Standards

- *Out of Many, One: Towards Rigorous Common Core Standards from the Ground Up*. (2008). Washington, DC: Achieve. 2008. (see C2 - in 12 of 12 states analyzed)
- U.S. Dept. of Education. (2011). *Writing Framework for the 2011 National Assessment of Educational Progress.* Washington, DC: National Assessment Governing Board. (see Advanced Achievement Level, Grade 12, box 6; Holistic Scoring Guides Level 6, bullet 4 "to Persuade"; "To Explain"; "To Convey Experience")
- Intersegmental Committee of the Academic Senates (ICAS). (2002) *Academic Literacy: A Statement of Competencies Expected of Students Entering California's Public Colleges and Universities.* (see Writing Competencies, Invention, bullet 2)
- Conley, D.T. (2003) *Understanding University Success: A Report from Standards for Success.* Eugene, OR: Center for Educational Policy Research. (see II.E.4-6 and II.D.6*)
- A counterpart of this standard appears in the English language arts standards from the following states:

    1. **California**: *English-Language Arts Content Standards for California Public Schools*, 1997. (see 1.2, 1.5, and 1.9, Writing Strategies Grades 11-12)
    2. **Massachusetts**: *English Language Arts Curriculum Framework*, June 2001. (see General Standard 21: Revising, 21.8, 21.9)

Writing 9. Demonstrate command of the conventions of standard written English, including grammar, usage, and mechanics.

College Readiness

- Milewski, G.B., Johnsen, D., Glazer, N., & Kubota, M. (2005). *A Survey to Evaluate the Alignment of the New SAT® Writing and Critical Reading Sections to Curricula and Instructional Practices*. New York, NY: College Board (see pgs. 10 and 12, these data have been sorted by importance to clarify which skills are most important to post-secondary instructors, see skills #6, #8, #11, #13, #16, #18, #19, #20, #25, #26, #28, #31, #32, #34, #39, #40, #41, #43, #44).
- *AP English Language and Composition and English Literature and Composition Course Description* (2008), New York, NY: College Board (see pg. 11 for course expectations).
- Conley, D. (2003) *Understanding University Success: English Work Samples*. Eugene, OR: Center for Educational Policy Research.
- ACT (2006). *ACT National Curriculum Survey 2005-2006*. Iowa City, IA: ACT. (pgs. 39-40, these data have been re-sorted by importance to clarify which skills are most important to post-secondary instructors, see skills #2, #5, #6, #7, #8, #10, #11, #14, #16, #18, #20, #21, #24, #25, #26, #28).
- *Virginia Postsecondary Outreach Campaign and Data Collection, Essential English Skills Analysis*. (see Language 1; survey of multi-disciplinary faculty teams at 30 higher education institutions; included if average rating is at least 7.5 on a scale of 10)
- *Florida American Diploma Project Survey Results*. (see row 3; survey of faculty members at 18 public higher education institutions; included if average rating is at least 7.5 on a scale of 10)

Evidence for Individual Reading, Writing, and Speaking and Listening Standards

Career Readiness

- *Hawai'i Career Ready Study*. (2007). Commissioned by the Hawai'i P-20 Initiative. (see pgs. 22-24 sample task "Pass entrance exams for apprenticeship," Military/Navy Shipyard Apprenticeship)
- *The American Diploma Project Workplace Study*. (2002). Washington, DC: National Alliance of Business. (see top half, pg. 10; pg. 17; data gathered through employer feedback from 21 organizations in eight states representing over 10 industries)
- ACT (2009) See ACT WorkKeys Writing Level 3 requirements (Level 3 is workplace training and college ready).

Illustrative International Benchmarks

- A counterpart of this standard appears in the English language arts standards and learning outcomes from the following high performing countries, as defined by their top 10 ranking on the 2006 Programme of International Student Assessment (PISA) Reading Scale:

    1. **Alberta, Canada:** English Language Arts Curriculum Outcomes, 2003 (Grades 10-12) (see 4.2.4.b-g)
    2. **British Columbia, Canada:** *English Language Arts Integrated Resource Package*, Prescribed Learning Outcomes, 2007 (Grades 11-12) (see C14)
    3. **Finland:** *National Core Curriculum for Upper Secondary Schools* for Mother Tongue and Literature, Finnish as the mother tongue, 2003 (≈ Grades 10-12) (see AI.8.C.4)
    4. **Ireland:** *Leaving Certificate/English Syllabus* for Higher Level and Ordinary Level (≈ Grades 10-11) (see 5.3)
    5. **Ontario, Canada:** *The Ontario Curriculum, English*, 2007 (Grades 11-12) (see 3.3 and 3.4, Grade 12 Writing)
    6. **Victoria, Australia:** *Victorian Certificate of Education Study Design: English/English as a Second Language*, 2007 (≈ Grades 11-12) (see Unit 1, Outcome 1, Key Skill 7)

- A counterpart of this standard also appears in the English language arts standards of the following:

    1. **England:** *English Programme of Study for Key stage 4*, 2005 (≈ Grades 10-11) (see 1.1.c; 2.3.n-o)
    2. **Singapore:** *English Language Syllabus 2001*, Learning Outcomes for O-Levels (≈ Grades 10-11) (see 5.d; 6.c)

Illustrative Alignment with State and Other Standards

- *Out of Many, One: Towards Rigorous Common Core Standards from the Ground Up*. (2008). Washington, DC: Achieve. 2008. (see A1 - in 12 of 12 states analyzed)
- U.S. Dept. of Education. (2011). *Writing Framework for the 2011 National Assessment of Educational Progress*. Washington, DC: National Assessment Governing Board. (see Advanced Achievement Level, Grade 12, box 7; Holistic Scoring Guides Level 6, bullet 4 "to Persuade"; "To Explain"; "To Convey Experience")
- Intersegmental Committee of the Academic Senates (ICAS). (2002) *Academic Literacy: A Statement of Competencies Expected of Students Entering California's Public Colleges and Universities*. (see Writing Competencies, Style/Expression, bullet 2)
- Conley, D.T. (2003) *Understanding University Success: A Report from Standards for Success*. Eugene, OR: Center for Educational Policy Research. (see II.A & II.B)

Evidence for Individual Reading, Writing, and Speaking and Listening Standards

- A counterpart of this standard appears in the English language arts standards from the following states:

    1. **California**: *English-Language Arts Content Standards for California Public Schools*, 1997. (see 1.1 and 1.2, Written and Oral English Language Conventions Grades 11-12)
    2. **Massachusetts**: *English Language Arts Curriculum Framework*, June 2001. see 5.28, 5.30; 21.8; General Standard 22: Standard English Conventions, 22.9, 22.10)

Writing 10. Represent and cite accurately the data, conclusions, and opinions of others, effectively incorporating them into one's own work while avoiding plagiarism.

College Readiness

- *AP English Language and Composition and English Literature and Composition Course Description* (2008), New York, NY: College Board (see pg. 11 for course expectations).
- *AP European History Course Description* (2009), New York, NY: College board (see pp. 21-24 for document-based question expectations). AP World and US History also have these expectations.
- ACT (2006). *ACT National Curriculum Survey 2005-2006*. Iowa City, IA: ACT. (pgs. 39-40, these data have been re-sorted by importance to clarify which skills are most important to post-secondary instructors, see skill #13).
- *Virginia Postsecondary Outreach Campaign and Data Collection, Essential English Skills Analysis*. (see Writing 6; survey of multi-disciplinary faculty teams at 30 higher education institutions; included if average rating is at least 7.5 on a scale of 10)
- *Florida American Diploma Project Survey Results*. (See row 21; survey of faculty members at 18 public higher education institutions; included if average rating is at least 7.5 on a scale of 10)

Career Readiness

- *The American Diploma Project Workplace Study*. (2002). Washington, DC: National Alliance of Business. (see point 4 on pg. 25; data gathered through employer feedback from 21 organizations in eight states representing over 10 industries)

Illustrative International Benchmarks

- A counterpart of this standard appears in the English language arts standards and learning outcomes from the following high performing countries, as defined by their top 10 ranking on the 2006 Programme of International Student Assessment (PISA) Reading Scale:

    1. **Alberta, Canada:** English Language Arts Curriculum Outcomes, 2003 (Grades 10-12) (see 3.2.1.c; 3.2.1.e)
    2. **British Columbia, Canada:** *English Language Arts Integrated Resource Package*, Prescribed Learning Outcomes, 2007 (Grade 12) (see C14)
    3. **Ontario, Canada:** *The Ontario Curriculum, English*, 2007 (Grades 11-12) (1.3, Grade 12 Writing)

Evidence for Individual Reading, Writing, and Speaking and Listening Standards

    4. **Victoria, Australia:** *Victorian Certificate of Education Study Design: English/English as a Second Language*, 2007 (≈ Grades 11-12) (see Unit 3, Outcome 3, Key Skill 5)

Illustrative Alignment with State and Other Standards

- Intersegmental Committee of the Academic Senates (ICAS). (2002) *Academic Literacy: A Statement of Competencies Expected of Students Entering California's Public Colleges and Universities*. (see Writing Competencies, "Students will be assigned writing tasks…," bullet 14; Technology Competencies, bullet 8)
- Conley, D.T. (2003) *Understanding University Success: A Report from Standards for Success*. Eugene, OR: Center for Educational Policy Research. (see II.D.7; III.B.4; III.B.6)
- A counterpart of this standard appears in the English language arts standards from the following states:

    1. **California**: *English-Language Arts Content Standards for California Public Schools*, 1997. (See 1.7, Writing Strategies Grades 9-10)
    2. **Massachusetts**, *English Language Arts Curriculum Framework*, June 2001. (see 24.5)

Writing 11. Assess the quality of one's own writing, and, when necessary, strengthen it through revision.

College Readiness

- Milewski, G.B., Johnsen, D., Glazer, N., & Kubota, M. (2005). *A Survey to Evaluate the Alignment of the New SAT® Writing and Critical Reading Sections to Curricula and Instructional Practices*. New York, NY: College Board (see pgs. 10 and 12, these data have been sorted by importance to clarify which skills are most important to post-secondary instructors, see skills #1, #7, #12, #16, #24, #33, #37).
- *AP English Language and Composition and English Literature and Composition Course Description* (2008), New York, NY: College Board (see pg. 11 for course expectations).
- ACT (2006). *ACT National Curriculum Survey 2005-2006*. Iowa City, IA: ACT. (pgs. 39-40, these data have been re-sorted by importance to clarify which skills are most important to post-secondary instructors, see skill #15).
- *Virginia Postsecondary Outreach Campaign and Data Collection, Essential English Skills Analysis*. (see Writing 4 and 5; survey of multi-disciplinary faculty teams at 30 higher education institutions; included if average rating is at least 7.5 on a scale of 10)
- *Florida American Diploma Project Survey Results*. (see rows 16 and 22; survey of faculty members at 18 public higher education institutions; included if average rating is at least 7.5 on a scale of 10)

Career Readiness

Illustrative International Benchmarks

- A counterpart of this standard appears in the English language arts standards and learning outcomes from the following high performing countries, as defined by their top 10 ranking on the 2006 Programme of International Student Assessment (PISA) Reading Scale:

Evidence for Individual Reading, Writing, and Speaking and Listening Standards

1. **Alberta, Canada:** English Language Arts Curriculum Outcomes, 2003 (Grades 10-12) (see 20/30.4.2.1.a-d; 30.4.2.2.a, 20/30.4.2.2.b-c, 10/20.4.2.2.d-e)
2. **British Columbia, Canada:** *English Language Arts Integrated Resource Package*, Prescribed Learning Outcomes, 2007 (Grade 12) (see C7)
3. **Finland:** *National Core Curriculum for Upper Secondary Schools* for Mother Tongue and Literature, Finnish as the mother tongue, 2003 (≈ Grades 10-12) (AI 2.O.2; AI 2.CC.3; AI 5.O.3; AI 8.CC.3)
4. **Hong Kong:** *English Language Curriculum and Assessment Guide*, 2007. (≈Grades 10-11) (see bullet 7, Writing; see Senior Secondary, bullet 2)
5. **New South Wales, Australia:** *English Stage 6 Syllabus*, 1999 (Grades 11-12) (see C-12.1-12.4, Preliminary)
6. **Ontario, Canada:** *The Ontario Curriculum, English*, 2007 (Grades 11-12) (see 2.7, Grade 12 Writing)
7. **Victoria, Australia:** *Victorian Certificate of Education Study Design: English/English as a Second Language*, 2007 (≈ Grades 11-12) (see Unit 1, Outcome 1, Key Skill 5; Unit 1, Outcomes 2, Key Knowledge 4; Unit 1, Outcome 3, Key Skill 3)

- A counterpart of this standard also appears in the English language arts standards of the following :

  1. **England:** *English Programme of Study for Key stage 4*, 2005 (≈ Grades 10-11) (see 2.3.l; 4.3.e)
  2. **Singapore:** *English Language Syllabus 2001*, Learning Outcomes for O-Levels (≈ Grades 10-11) (see 5.f)

Illustrative Alignment with State and Other Standards

- Conley, D.T. (2003) *Understanding University Success: A Report from Standards for Success*. Eugene, OR: Center for Educational Policy Research. (see II.F)
- Intersegmental Committee of the Academic Senates (ICAS). (2002) *Academic Literacy: A Statement of Competencies Expected of Students Entering California's Public Colleges and Universities*. (see Writing Competencies, Arrangement, bullet 6 and Style/Expression, bullet 2)
- A counterpart of this standard appears in the English language arts standards from the following states:

  1. **California**: *English-Language Arts Content Standards for California Public Schools*, 1997. (See 1.9, Writing Strategies Grades 9-12).
  2. **Massachusetts**, *English Language Arts Curriculum Framework*, June 2001. (see General Standard 21: Revising, 21.8, 21.9)

Writing 12. Use technology as a tool to produce, edit, and distribute writing.

College Readiness

Career Readiness

- *Virginia Postsecondary Outreach Campaign and Data Collection, Essential English Skills Analysis*. (See Writing 8; survey of multi-disciplinary faculty teams at 30 higher education institutions; included if average rating is at least 7.5 on a scale of 10)

Illustrative International Benchmarks

Evidence for Individual Reading, Writing, and Speaking and Listening Standards

- A counterpart of this standard appears in the English language arts standards and learning outcomes from the following high performing countries, as defined by their top 10 ranking on the 2006 Programme of International Student Assessment (PISA) Reading Scale:

  1. **Hong Kong:** *English Language Curriculum and Assessment Guide*, 2007. (≈Grades 10-11) (see Information Technology, Senior Secondary, bullet 4)
  2. **New South Wales, Australia:** *English Stage 6 Syllabus*, 1999 (Grades 11-12) (see C-9.1, HSC)
  3. **Ontario, Canada:** *The Ontario Curriculum, English*, 2007 (Grades 11-12) (see 3.5-3.6, Grade 12 Writing)

Illustrative Alignment with State and Other Standards

- Intersegmental Committee of the Academic Senates (ICAS). (2002) *Academic Literacy: A Statement of Competencies Expected of Students Entering California's Public Colleges and Universities*. (see Technology Competencies, bullets 1-2)

Writing 13. Synthesize information from multiple relevant sources, including graphics and quantitative information when appropriate, to provide an accurate picture of that information.

College Readiness

- Milewski, G.B., Johnsen, D., Glazer, N., & Kubota, M. (2005). *A Survey to Evaluate the Alignment of the New SAT® Writing and Critical Reading Sections to Curricula and Instructional Practices*. New York, NY: College Board (see pgs. 10 and 12, these data have been sorted by importance to clarify which skills are most important to post-secondary instructors, see skills #2, #5, #15, #29).
- *AP English Language and Composition and English Literature and Composition Course Description* (2008), New York, NY: College Board (see pg. 11 for course expectations).
- *AP European History Course Description* (2009), New York, NY: College board (see pp. 21-24 for document-based question expectations). AP World and US History also have these expectations.
- ACT (2006). *ACT National Curriculum Survey 2005-2006*. Iowa City, IA: ACT. (pgs. 39-40, these data have been re-sorted by importance to clarify which skills are most important to post-secondary instructors, see skills #3).
- *Florida American Diploma Project Survey Results*. (see row 24; survey of faculty members at 18 public higher education institutions; included if average rating is at least 7.5 on a scale of 10)

Career Readiness

- *Hawai'i Career Ready Study*. (2007). Commissioned by the Hawai'i P-20 Initiative. (See pgs. 18-19 sample task "Review claim letter," Insurance/Claims Agent)
- *The American Diploma Project Workplace Study*. (2002). Washington, DC: National Alliance of Business. (see pgs. 22-23; data gathered through employer feedback from 21 organizations in eight states representing over 10 industries)

Illustrative International Benchmarks

Evidence for Individual Reading, Writing, and Speaking and Listening Standards

- A counterpart of this standard appears in the English language arts standards and learning outcomes from the following high performing countries, as defined by their top 10 ranking on the 2006 Programme of International Student Assessment (PISA) Reading Scale:

  1. **Alberta, Canada:** English Language Arts Curriculum Outcomes, 2003 (Grades 10-12) (see 30.3.2.3.a)
  2. **British Columbia, Canada:** English Language Arts Integrated Resource Package, Prescribed Learning Outcomes, 2007 (Grade 12) (see C8 and C10)
  3. **Hong Kong:** *English Language Curriculum and Assessment Guide*, 2007. (≈Grades 10-11) (see bullet 2, Writing; Information Technology Skills, Senior Secondary 1;Study Skills, Senior Secondary, bullet 1)
  4. **New South Wales, Australia:** *English Stage 6 Syllabus*, 1999 (Grades 11-12) (see 10.1, Preliminary; Outcome 7, HSC)
  5. **Ontario, Canada:** *The Ontario Curriculum, English*, 2007 (Grades 11-12) (see 1.3, Grade 12 Writing)

- A counterpart of this standard also appears in the English language arts standards of the following:

  1. **England:** *English Programme of Study for Key stage 4*, 2005 (≈ Grades 10-11) (see 2.2.e)
  2. **Singapore:** *English Language Syllabus 2001*, Learning Outcomes for O-Levels (≈ Grades 10-11) (see 9.1.b)

Illustrative Alignment with State and Other Standards

- *Out of Many, One: Towards Rigorous Common Core Standards from the Ground Up*. (2008). Washington, DC: Achieve. 2008. (see F7 - in 12 of 12 states analyzed)
- Intersegmental Committee of the Academic Senates (ICAS). (2002) *Academic Literacy: A Statement of Competencies Expected of Students Entering California's Public Colleges and Universities*. (see Fostering Habits of Mind Essential for Success, bullet 4; Writing Competencies, "Students will be assigned writing tasks…," bullet 5)
- Conley, D.T. (2003) *Understanding University Success: A Report from Standards for Success*. Eugene, OR: Center for Educational Policy Research. (see II.E.8*, and III.B.6)
- A counterpart of this standard appears in the English language arts standards from the following states:

  1. **California**: *English-Language Arts Content Standards for California Public Schools*, 1997. (see 1.6 and 1.8, Writing Strategies Grades 11-12; 2.4.b-d, Writing Applications Grades 11-12)

Writing 14. Convey complex information clearly and coherently to the audience through purposeful selection and organization of content.

College Readiness

- Milewski, G.B., Johnsen, D., Glazer, N., & Kubota, M. (2005). *A Survey to Evaluate the Alignment of the New SAT® Writing and Critical Reading Sections to Curricula and Instructional Practices*. New York, NY: College Board (see pgs. 10 and 12, these data have been sorted by importance to clarify which skills are most important to post-secondary instructors, see skills #1, #2, #5, #12, #15, #29, #37).

Evidence for Individual Reading, Writing, and Speaking and Listening Standards

- *AP English Language and Composition and English Literature and Composition Course Description* (2008), New York, NY: College Board (see pg. 11 for course expectations).
- ACT (2006). *ACT National Curriculum Survey 2005-2006*. Iowa City, IA: ACT. (pgs. 39-40, these data have been re-sorted by importance to clarify which skills are most important to post-secondary instructors, see skills #1, #3, #4, #12, #15).

Career Readiness

- ACT (2009) See ACT WorkKeys Writing Level 3 requirements (Level 3 is workplace training and college ready).
- *The American Diploma Project Workplace Study*. (2002). Washington, DC: National Alliance of Business. (see point 2 on pg. 19; data gathered through employer feedback from 21 organizations in eight states representing over 10 industries)

Illustrative International Benchmarks

- A counterpart of this standard appears in the English language arts standards and learning outcomes from the following high performing countries, as defined by their top 10 ranking on the 2006 Programme of International Student Assessment (PISA) Reading Scale:

  1. **Alberta, Canada:** English Language Arts Curriculum Outcomes, 2003 (Grades 10-12) (see 10/20/30.3.2.1.d)
  2. **British Columbia, Canada:** *English Language Arts Integrated Resource Package*, Prescribed Learning Outcomes, 2007 (Grade 12) (see C4)
  3. **Hong Kong:** *English Language Curriculum and Assessment Guide*, 2007. (≈Grades 10-11) (see "Work with others", dash 1, Language Development)
  4. **Ireland:** *Leaving Certificate/English Syllabus for Higher Level and Ordinary Level* (≈ Grades 10-11) (see 5.5.e, Ordinary Level; 5.4.e, Higher Level)
  5. **New South Wales, Australia:** *English Stage 6 Syllabus*, 1999 (Grades 11-12) (see Outcome 7, HSC; 10.3, Preliminary)
  6. **Ontario, Canada:** *The Ontario Curriculum, English*, 2007 (Grades 11-12) (see 1.4 & 2.1, Grade 12 Writing)

- A counterpart of this standard also appears in the English language arts standards of the following:

  1. **England:** *English Programme of Study for Key stage 4*, 2005 (≈ Grades 10-11) (see 1.1.a; 2.3.c)
  2. **Singapore:** *English Language Syllabus 2001*, Learning Outcomes for O-Levels (≈ Grades 10-11) (see 9.1.b)

Illustrative Alignment with State and Other Standards

- U.S. Dept. of Education. (2011). *Writing Framework for the 2011 National Assessment of Educational Progress*. Washington, DC: National Assessment Governing Board. (see Holistic Scoring Guide for "To Explain" Level 6)
- Intersegmental Committee of the Academic Senates (ICAS). (2002) *Academic Literacy: A Statement of Competencies Expected of Students Entering California's Public Colleges and Universities*. (see Writing Competencies, Invention, bullet 2; Arrangement, bullets 3 & 4)
- Conley, D.T. (2003) *Understanding University Success: A Report from Standards for Success*. Eugene, OR: Center for Educational Policy Research. (see II.E.8*, II.D.2, II.D.4)
- A counterpart of this standard appears in the English language arts standards from the following states:

Evidence for Individual Reading, Writing, and Speaking and Listening Standards

1. **California**: *English-Language Arts Content Standards for California Public Schools*, 1997. (see 2.3 and 2.6.a, Writing Applications Grades 9-10)
2. **Massachusetts**: *English Language Arts Curriculum Framework*, June 2001. (see General Standard 19: Writing, 19.26, 19.30)

Writing 15. Demonstrate understanding of content by reporting facts accurately and anticipating reader misconceptions.

College Readiness

- Milewski, G.B., Johnsen, D., Glazer, N., & Kubota, M. (2005). *A Survey to Evaluate the Alignment of the New SAT® Writing and Critical Reading Sections to Curricula and Instructional Practices*. New York, NY: College Board (see pgs. 10 and 12, these data have been sorted by importance to clarify which skills are most important to post-secondary instructors, see skills #1, #2, #5, #12, #15, #29, #37).
- ACT (2006). *ACT National Curriculum Survey 2005-2006*. Iowa City, IA: ACT. (pgs. 39-40, these data have been re-sorted by importance to clarify which skills are most important to post-secondary instructors, see skills #3, #15).

Career Readiness

Illustrative International Benchmarks

- A counterpart of this standard appears in the English language arts standards and learning outcomes from the following high performing countries, as defined by their top 10 ranking on the 2006 Programme of International Student Assessment (PISA) Reading Scale:

  1. **British Columbia, Canada:** *English Language Arts Integrated Resource Package*, Prescribed Learning Outcomes, 2007 (Grade 12) (see C2; C4)

Illustrative Alignment with State and Other Standards

- Intersegmental Committee of the Academic Senates (ICAS). (2002) *Academic Literacy: A Statement of Competencies Expected of Students Entering California's Public Colleges and Universities*. (see Writing Competencies, "Students will be assigned writing tasks…," bullets 6 & 7)
- Conley, D.T. (2003) *Understanding University Success: A Report from Standards for Success*. Eugene, OR: Center for Educational Policy Research. (see II.E.8*)
- A counterpart of this standard appears in the English language arts standards from the following states:

  1. **California**: *English-Language Arts Content Standards for California Public Schools*, 1997. (see 2.3 & 2.6.d, Writing Applications Grades 9-10)

Writing 16. Establish a substantive claim, distinguishing it from alternate or opposing claims.

College Readiness

Evidence for Individual Reading, Writing, and Speaking and Listening Standards

- Milewski, G.B., Johnsen, D., Glazer, N., & Kubota, M. (2005). *A Survey to Evaluate the Alignment of the New SAT® Writing and Critical Reading Sections to Curricula and Instructional Practices*. New York, NY: College Board (see pgs. 10 and 12, these data have been sorted by importance to clarify which skills are most important to post-secondary instructors, see skills #1, #4, #5, #10, #12, #14, #29).
- *AP English Language and Composition and English Literature and Composition Course Description* (2008), New York, NY: College Board (see pg. 11 for course expectations).
- *AP European History Course Description* (2009), New York, NY: College board (see pp. 21-24 for document-based question expectations). AP World and US History also have these expectations.
- ACT (2006). *ACT National Curriculum Survey 2005-2006*. Iowa City, IA: ACT. (pgs. 39-40, these data have been re-sorted by importance to clarify which skills are most important to post-secondary instructors, see skills #23).
- *Virginia Postsecondary Outreach Campaign and Data Collection, Essential English Skills Analysis*. (see Logic 9; survey of multi-disciplinary faculty teams at 30 higher education institutions; included if average rating is at least 7.5 on a scale of 10)
- *Florida American Diploma Project Survey Results*. (see row 7; survey of faculty members at 18 public higher education institutions; included if average rating is at least 7.5 on a scale of 10)

Career Readiness

- *The American Diploma Project Workplace Study*. (2002). Washington, DC: National Alliance of Business. (see point *f3* on pg. 21; data gathered through employer feedback from 21 organizations in eight states representing over 10 industries)

Illustrative International Benchmarks

- A counterpart of this standard appears in the English language arts standards and learning outcomes from the following high performing countries, as defined by their top 10 ranking on the 2006 Programme of International Student Assessment (PISA) Reading Scale:

  1. **British Columbia, Canada:** English Language Arts Integrated Resource Package, Prescribed Learning Outcomes, 2007 (Grade 12) (see A2, C2, C4)
  2. **Finland:** *National Core Curriculum for Upper Secondary Schools* for Mother Tongue and Literature, Finnish as the mother tongue, 2003 (≈ Grades 10-12) (see AI 4.CC.3-5)
  3. **Hong Kong:** *English Language Curriculum and Assessment Guide*, 2007. (≈Grades 10-11) (see bullets 3 and 11, Writing, see Communication Skills, Senior Secondary, bullet 2)
  4. **Ireland:** *Leaving Certificate/English Syllabus for Higher Level and Ordinary Level* (≈ Grades 10-11) (see 4.2.2.a-b; 5.4.e, Higher Level)
  5. **New South Wales, Australia:** *English Stage 6 Syllabus,* 1999 (Grades 11-12) (see 6.2, HSC)
  6. **Victoria, Australia:** *Victorian Certificate of Education Study Design: English/English as a Second Language,* 2007 (≈ Grades 11-12) (see Unit 3, Outcome 3, Key Knowledge 4 & Skill 3)

Illustrative Alignment with State and Other Standards

- *Out of Many, One: Towards Rigorous Common Core Standards from the Ground Up*. (2008). Washington, DC: Achieve. 2008. (see E9 - in 11 of 12 states analyzed)

Evidence for Individual Reading, Writing, and Speaking and Listening Standards

- U.S. Dept. of Education. (2011). *Writing Framework for the 2011 National Assessment of Educational Progress*. Washington, DC: National Assessment Governing Board. (see Holistic Scoring Guide for "To Persuade" Level 6)
- Conley, D.T. (2003) *Understanding University Success: A Report from Standards for Success*. Eugene, OR: Center for Educational Policy Research. (see II.E.2)
- A counterpart of this standard appears in the English language arts standards from the following states:

    1. **California**: *English-Language Arts Content Standards for California Public Schools*, 1997. (see 2.4, Writing Applications Grades 9-10)
    2. **Massachusetts**, *English Language Arts Curriculum Framework*, June 2001. (see 19.30)

Writing 17. Link claims and evidence with clear reasons, and ensure that the evidence is relevant and sufficient to support the claims.

College Readiness

- Milewski, G.B., Johnsen, D., Glazer, N., & Kubota, M. (2005). *A Survey to Evaluate the Alignment of the New SAT® Writing and Critical Reading Sections to Curricula and Instructional Practices*. New York, NY: College Board (see pgs. 10 and 12, these data have been sorted by importance to clarify which skills are most important to post-secondary instructors, see skills #1, #4, #5, #10, #14, #29, #30).
- *AP English Language and Composition and English Literature and Composition Course Description* (2008), New York, NY: College Board (see pg. 11 for course expectations).
- *AP European History Course Description* (2009), New York, NY: College board (see pp. 21-24 for document-based question expectations). AP World and US History also have these expectations.
- Conley, D. (2003) *Understanding University Success: English Work Samples*. Eugene, OR: Center for Educational Policy Research.
- ACT (2006). *ACT National Curriculum Survey 2005-2006*. Iowa City, IA: ACT. (pgs. 39-40, these data have been re-sorted by importance to clarify which skills are most important to post-secondary instructors, see skills #1, #3, #4, #12, #15).

Career Readiness

- *The American Diploma Project Workplace Study*. (2002). Washington, DC: National Alliance of Business. (see f3, pg. 21; data gathered through employer feedback from 21 organizations in eight states representing over 10 industries)

Illustrative International Benchmarks

- A counterpart of this standard appears in the English language arts standards and learning outcomes from the following high performing countries, as defined by their top 10 ranking on the 2006 Programme of International Student Assessment (PISA) Reading Scale:

    1. **Alberta, Canada:** English Language Arts Curriculum Outcomes, 2003 (Grades 10-12) (see 20.4.1.3.f; 20/30.4.2.1.c)
    2. **New South Wales, Australia:** *English Stage 6 Syllabus*, 1999 (Grades 11-12) (see 6.2, HSC; 10.2 and 10.3, HSC)
    3. **Ontario, Canada:** *The Ontario Curriculum, English*, 2007 (Grades 11-12) (see 1.4 and 1.5, Grade 12 Writing)

Evidence for Individual Reading, Writing, and Speaking and Listening Standards

    4. **Victoria, Australia:** *Victorian Certificate of Education Study Design: English/English as a Second Language*, 2007 (≈ Grades 11-12) (see Unit 1, Outcome 2, Key Skill 3; Unit 4, Outcome 2, Key Skills 2-3; Unit 3, Outcome 3, Key Knowledge 4 & Skill 3)

- A counterpart of this standard also appears in the English language arts standards of the following:

    1. **England:** *English Programme of Study for Key stage 4*, 2005 (≈ Grades 10-11) (see 2.3.h-i)
    2. **Singapore:** *English Language Syllabus 2001*, Learning Outcomes for O-Levels (≈ Grades 10-11) (see 9.1.d)

Illustrative Alignment with State and Other Standards

- U.S. Dept. of Education. (2011). *Writing Framework for the 2011 National Assessment of Educational Progress*. Washington, DC: National Assessment Governing Board. (see Holistic Scoring Guide for "To Persuade" Level 6)
- Intersegmental Committee of the Academic Senates (ICAS). (2002) *Academic Literacy: A Statement of Competencies Expected of Students Entering California's Public Colleges and Universities*. (see Fostering Habits of Mind Essential for Success, bullet 16)
- Conley, D.T. (2003) *Understanding University Success: A Report from Standards for Success*. Eugene, OR: Center for Educational Policy Research. (see II.E.2; II.E.3; IV.B.2)
- A counterpart of this standard appears in the English language arts standards from the following states:

    1. **California**: *English-Language Arts Content Standards for California Public Schools*, 1997. (2.2.c and 2.4.a-e, Writing Applications Grades 11-12; 1.3, Writing Strategies Grades 11-12)
    2. **Massachusetts**: *English Language Arts Curriculum Framework*, June 2001. (see General Standard 19; Writing, 19.26, 19.30)

Writing 18. Acknowledge competing arguments or information, defending or qualifying the initial claim as appropriate.

College Readiness

- Milewski, G.B., Johnsen, D., Glazer, N., & Kubota, M. (2005). *A Survey to Evaluate the Alignment of the New SAT® Writing and Critical Reading Sections to Curricula and Instructional Practices*. New York, NY: College Board (see pgs. 10 and 12, these data have been sorted by importance to clarify which skills are most important to post-secondary instructors, see skills #4, #5, #10, #12, #14, #29).
- *AP European History Course Description* (2009), New York, NY: College board (see pp. 21-24 for document-based question expectations). AP World and US History also have these expectations.
- ACT (2006). *ACT National Curriculum Survey 2005-2006*. Iowa City, IA: ACT. (pgs. 39-40, these data have been re-sorted by importance to clarify which skills are most important to post-secondary instructors, see skills #15).

Career Readiness

Illustrative International Benchmarks

Evidence for Individual Reading, Writing, and Speaking and Listening Standards

- A counterpart of this standard appears in the English language arts standards and learning outcomes from the following high performing countries, as defined by their top 10 ranking on the 2006 Programme of International Student Assessment (PISA) Reading Scale:

    1. **British Columbia, Canada:** *English Language Arts Integrated Resource Package*, Prescribed Learning Outcomes, 2007 (Grade 12) (see B9)
    2. **Hong Kong:** *English Language Curriculum and Assessment Guide*, 2007. (≈Grades 10-11) (see "Plan…", dash five, Language Development)

Illustrative Alignment with State and Other Standards

- Conley, D.T. (2003) *Understanding University Success: A Report from Standards for Success.* Eugene, OR: Center for Educational Policy Research. (see II.E.4)
- U.S. Dept. of Education. (2011). *Writing Framework for the 2011 National Assessment of Educational Progress.* Washington, DC: National Assessment Governing Board. (see Holistic Scoring Guide for "To Persuade" Level 6)

- A counterpart of this standard appears in the English language arts standards from the following states:

    1. **California**: *English-Language Arts Content Standards for California Public Schools*, 1997. (see 2.4.d, Writing Applications Grades 9-10)
    2. **Massachusetts**, *English Language Arts Curriculum Framework,* June 2001. (see 19.30)

Evidence for Individual Reading, Writing, and Speaking and Listening Standards

Speaking & Listening Evidence

Speaking 1. Select and use a format, organization, and style appropriate to the topic, purpose, and audience.

College Readiness

Career Readiness

- *The American Diploma Project Workplace Study*. (2002). Washington, DC: National Alliance of Business. (See pg. 19; data gathered through employer feedback from 21 organizations in eight states representing over 10 industries)
- Qualifications and Curriculum Authority. (2007). *Functional Skills and Standards.* (see pg. 12, Speaking and Listening Level 2, bullet 3)
- *Missouri Career Prep Certificate Program Planning Guide,* Missouri Department of Elementary and Secondary Education. (see pg. A5, Communication: Written, Verbal, and Listening, Knowledge skill 2)

Illustrative International Benchmarks

- A counterpart of this standard appears in the English language arts standards and learning outcomes from the following high performing countries, as defined by their top 10 ranking on the 2006 Programme of International Student Assessment (PISA) Reading Scale:

    1. **Alberta, Canada:** *English Language Arts Curriculum Outcomes*, 2003 (Grades 10-12) (see 10.4.1.4.b, 10/20/30.4.1.4.c)
    2. **British Columbia, Canada:** *English Language Arts Integrated Resource Package, Prescribed Learning Outcomes*, 2007 (Grade 12) (see A6, A12)
    3. **Hong Kong:** *English Language Curriculum and Assessment Guide*, 2007. (≈Grades 10-11) (see Speaking, bullets 1, 4, and 5)
    4. **Ontario, Canada:** *The Ontario Curriculum, English*, 2007 (Grades 11-12) (see 2.1 - 2.6, Grade 12 Oral Communication)
    5. **Victoria, Australia:** *Victorian Certificate of Education Study Design: English/English as a Second Language*, 2007 (≈ Grades 11-12) (see Unit 3, Outcome 1, Key Skills 6-7)

- A counterpart of this standard also appears in the English language arts standards of the following :

    1. **England:** *English Programme of Study for Key stage 4*, 2005 (≈ Grades 10-11) (see 2.1.a-c)
    2. **Singapore:** *English Language Syllabus 2001*, Learning Outcomes for O-Levels (≈ Grades 10-11) (see 3.a-f, 4.a-f)

Illustrative Alignment with State and Other Standards

- A counterpart of this standard appears in the English language arts standards from the following states:

    1. **Massachusetts:** *English Language Arts Curriculum Framework*, June 2001. (see General Standard 3: Oral Presentation, 3.17)

2. **Texas:** *Texas College Readiness Standards*, (2008). (see pg. 4-5, Speaking, A.1-2)

Speaking 2. Present information, findings, and supporting evidence clearly and concisely.

College Readiness

Career Readiness

- *The American Diploma Project Workplace Study*. (2002). Washington, DC: National Alliance of Business. (See pg. 19; data gathered through employer feedback from 21 organizations in eight states representing over 10 industries)
- Casner-Lotto, J., Rosenblum, E., and Wright, M., *The Ill-Prepared Workforce*. (2009). The Conference Board. (see pg. 22, Oral Communications)
- Qualifications and Curriculum Authority. (2007). *Functional Skills and Standards*. (see pg. 12, Speaking and Listening Level 2, bullet 2)

Illustrative International Benchmarks

- A counterpart of this standard appears in the English language arts standards and learning outcomes from the following high performing countries, as defined by their top 10 ranking on the 2006 Programme of International Student Assessment (PISA) Reading Scale:

  1. **British Columbia, Canada:** *English Language Arts Integrated Resource Package, Prescribed Learning Outcomes*, 2007 (Grade 12) (see A8, A9)
  2. **Finland:** *National Core Curriculum for Upper Secondary Schools* for Mother Tongue and Literature, Finnish as the mother tongue, 2003 (≈ Grades 10-12) (see AI 4.O.2)
  3. **Hong Kong:** *English Language Curriculum and Assessment Guide*, 2007. (≈Grades 10-11) (see Speaking, bullets 1-2)
  4. **Ontario, Canada:** *The Ontario Curriculum, English*, 2007 (Grades 11-12) (see 2.3, Grade 12 Oral Communication)
  5. **Victoria, Australia:** *Victorian Certificate of Education Study Design: English/English as a Second Language*, 2007 (≈ Grades 11-12) (see Unit 2, Outcome 3, Key Knowledge, bullet 5)

- A counterpart of this standard also appears in the English language arts standards of the following :

  1. **England:** *English Programme of Study for Key stage 4*, 2005 (≈ Grades 10-11) (2.1.b)
  2. **Singapore:** *English Language Syllabus 2001*, Learning Outcomes for O-Levels (≈ Grades 10-11) (see 4.b and 4.e)

Illustrative Alignment with State and Other Standards

- A counterpart of this standard appears in the English language arts standards from the following states:

Evidence for Individual Reading, Writing, and Speaking and Listening Standards

1. **Massachusetts:** *English Language Arts Curriculum Framework*, June 2001. (see General Standard 2, 2.5)
2. **Texas:** *Texas College Readiness Standards*, (2008). (see pg. 4-5, Speaking, B.3)

Speaking 3. Make strategic use of multimedia elements and visual displays of data to gain audience attention and enhance understanding.

College Readiness

Career Readiness

- *Missouri Career Prep Certificate Program Planning Guide*, Missouri Department of Elementary and Secondary Education. (see pg. A5, Communication: Written, Verbal, and Listening, Performance skill 4)

Illustrative International Benchmarks

- A counterpart of this standard appears in the English language arts standards and learning outcomes from the following high performing countries, as defined by their top 10 ranking on the 2006 Programme of International Student Assessment (PISA) Reading Scale:

  1. **Alberta, Canada:** English Language Arts Curriculum Outcomes, 2003 (Grades 10-12) (see 10.4.1.4.b, 20.4.1.4.b and 10/20/30.4.1.4.c)
  2. **British Columbia, Canada:** *English Language Arts Integrated Resource Package*, Prescribed Learning Outcomes, 2007 (Grade 12) (see A6)
  3. **Hong Kong:** *English Language Curriculum and Assessment Guide*, 2007. (≈Grades 10-11) (see Information Technology, Senior Secondary, bullets 3-5)
  4. **New South Wales, Australia:** *English Stage 6 Syllabus*, 1999 (Grades 11-12) (see C-5, 5.3, Preliminary)
  5. **Ontario, Canada:** *The Ontario Curriculum, English*, 2007 (Grades 11-12) (see 2.7, Grade 12 Oral Communication; 3.4, Grade 12 Media Studies)
  6. **Victoria, Australia:** *Victorian Certificate of Education Study Design: English/English as a Second Language*, 2007 (≈ Grades 11-12) (see Unit 1, Outcome 2, Key Skills 1 and 4; Unit 2, Outcome 3, Key Knowledge 5 and Key Skill 3)

- A counterpart of this standard also appears in the English language arts standards of the following :

  1. **Singapore:** *English Language Syllabus 2001*, Learning Outcomes for O-Levels (≈ Grades 10-11) (see 4.a, 4.c)

Illustrative Alignment with State and Other Standards

- *Out of Many, One: Towards Rigorous Common Core Standards from the Ground Up*. (2008). Washington, DC: Achieve. 2008. (see G4, in 12 of 12 states analyzed)
- A counterpart of this standard appears in the English language arts standards from the following states:

  1. **California:** *English-Language Arts Content Standards for California Public Schools*. (see 2.6, Grades 11-12; 2.4, Grades 11-12)
  2. **Massachusetts:** *English Language Arts Curriculum Framework*, June 2001. (see General Standard 27: Media Production, 27.6)

Evidence for Individual Reading, Writing, and Speaking and Listening Standards

Speaking 4. Demonstrate command of formal Standard English when appropriate to task and audience.

College Readiness

- *Virginia Postsecondary Outreach Campaign and Data Collection, Essential English Skills Analysis*. (see Language 1; survey of multi-disciplinary faculty teams at 30 higher education institutions; included if average rating is at least 7.5 on a scale of 10)
- *Florida American Diploma Project Survey Results*. (see row 3; survey of faculty members at 18 public higher education institutions; included if average rating is at least 7.5 on a scale of 10)

Career Readiness

- *The American Diploma Project Workplace Study*. (2002). Washington, DC: National Alliance of Business. (see pgs. 16-17, 19); data gathered through employer feedback from 21 organizations in eight states representing over 10 industries)

Illustrative International Benchmarks

- A counterpart of this standard appears in the English language arts standards and learning outcomes from the following high performing countries, as defined by their top 10 ranking on the 2006 Programme of International Student Assessment (PISA) Reading Scale:

    1. **British Columbia, Canada:** *English Language Arts Integrated Resource Package,* Prescribed Learning Outcomes, 2007 (Grade 12) (see A12)
    2. **Hong Kong:** *English Language Curriculum and Assessment Guide,* 2007. (≈Grades 10-11) (see Speaking, "Present Information…" bullet 4)
    3. **Victoria, Australia:** *Victorian Certificate of Education Study Design: English/English as a Second Language*, 2007 (≈ Grades 11-12) (see Unit 3, Outcome 1, Key Skill 6)

- A counterpart of this standard also appears in the English language arts standards of the following :

    1. **England:** *English Programme of Study for Key stage 4*, 2005 (≈ Grades 10-11) (see 2.1.a)
    2. **Singapore:** *English Language Syllabus 2001,* Learning Outcomes for O-Levels (≈ Grades 10-11) (see 3.e)

Illustrative Alignment with State and Other Standards

- *Out of Many, One: Towards Rigorous Common Core Standards from the Ground Up*. (2008). Washington, DC: Achieve. 2008. (see A1, in 12 of 12 states analyzed)

Speaking 5. Listen to complex information, and discern the main ideas, the significant details, and the relationships among them.

College Readiness

- *Virginia Postsecondary Outreach Campaign and Data Collection, Essential English Skills Analysis*. (See Communication 2 and 3; survey of multi-disciplinary faculty teams at 30 higher education institutions; included if average rating is at least 7.5 on a scale of 10)

Evidence for Individual Reading, Writing, and Speaking and Listening Standards

- *Florida American Diploma Project Survey Results*. (See rows 11 and 27; survey of faculty members at 18 public higher education institutions; included if average rating is at least 7.5 on a scale of 10)

Career Readiness

- *The American Diploma Project Workplace Study*. (2002). Washington, DC: National Alliance of Business. (See point 1, pg. 18; data gathered through employer feedback from 21 organizations in eight states representing over 10 industries)
- *Missouri Career Prep Certificate Program Planning Guide,* Missouri Department of Elementary and Secondary Education. (see pg. A5, Communication: Written, Verbal, and Listening, Knowledge skill 3 and Performance skill 5)
- Qualifications and Curriculum Authority. (2007). *Functional Skills and Standards.* (see pg. 12, Speaking and Listening Level 2, bullet 1)

Illustrative International Benchmarks

- A counterpart of this standard appears in the English language arts standards and learning outcomes from the following high performing countries, as defined by their top 10 ranking on the 2006 Programme of International Student Assessment (PISA) Reading Scale:

    1. **Alberta, Canada:** English Language Arts Curriculum Outcomes, 2003 (Grades 10-12) (see 10/20.2.1.2.b)
    2. **British Columbia, Canada:** English Language Arts Integrated Resource Package, Prescribed Learning Outcomes, 2007 (Grade 12) (see A3, A7, A8)
    3. **Finland**: *National Core Curriculum for Upper Secondary Schools* for Mother Tongue and Literature, Finnish as the mother tongue, 2003 (≈ Grades 10-12) (see AI 1.CC.3 and 1.CC.5)
    4. **Hong Kong**: *English Language Curriculum and Assessment Guide*, 2007. (≈Grades 10-11) (see Listening, bullets 1 and 2)
    5. **Ireland:** *Leaving Certificate/English Syllabus for Higher Level and Ordinary Level* (≈ Grades 10-11) (see 4.1.1.a, 4.1.1.c)
    6. **Ontario, Canada:** *The Ontario Curriculum, English*, 2007 (Grades 11-12) (see 1.4-1.6, Grade 12 Oral Communication)

- A counterpart of this standard also appears in the English language arts standards of the following :

    1. **England:** English Programme of Study for Key stage 4, 2005 (≈ Grades 10-11) (see 2.1.f)
    2. **Singapore:** English Language Syllabus 2001, Learning Outcomes for O-Levels (≈ Grades 10-11) (See 2.c, 2.e, 8.3.a-c)

Illustrative Alignment with State and Other Standards

- *Out of Many, One: Towards Rigorous Common Core Standards from the Ground Up*. (2008). Washington, DC: Achieve. 2008. (see B4, in 11 of 12 states analyzed)
- Intersegmental Committee of the Academic Senates (ICAS). (2002) *Academic Literacy: A Statement of Competencies Expected of Students Entering California's Public Colleges and Universities*. (Listening, bullet 2)
- A counterpart of this standard appears in the English language arts standards from the following states: S

Evidence for Individual Reading, Writing, and Speaking and Listening Standards

1. **Massachusetts**: *English Language Arts Curriculum Framework*, June 2001. (see General Standard 2, 2.5)
2. **Texas:** *Texas College Readiness Standards*, (2008). (see pg. 4-5, Listening, A.2-3, B.1-3)

Speaking 6. Follow the progression of the speaker's message, and evaluate the speaker's point of view, reasoning, and use of evidence and rhetoric.

College Readiness

Career Readiness

- *The American Diploma Project Workplace Study*. (2002). Washington, DC: National Alliance of Business. (See point 2, pg. 18; data gathered through employer feedback from 21 organizations in eight states representing over 10 industries)

Illustrative International Benchmarks

- A counterpart of this standard appears in the English language arts standards and learning outcomes from the following high performing countries, as defined by their top 10 ranking on the 2006 Programme of International Student Assessment (PISA) Reading Scale:

    1. **Alberta, Canada:** *English Language Arts Curriculum Outcomes*, 2003 (Grades 10-12) (see 30.2.2.2.f, 30.3.2.2.a-d)
    2. **British Columbia, Canada:** *English Language Arts Integrated Resource Package, Prescribed Learning Outcomes,* 2007 (Grade 12) (see A9)
    3. **Finland:** *National Core Curriculum for Upper Secondary Schools* for Mother Tongue and Literature, Finnish as the mother tongue, 2003 (≈ Grades 10-12) (see AI 2.O.1, AI 7.O.3)
    4. **Hong Kong:** *English Language Curriculum and Assessment Guide*, 2007. (≈Grades 10-11) (see Listening, bullets 6-7; Critical Thinking Skills, number 2 and bullets 1-4)
    5. **Ireland:** *Leaving Certificate/English Syllabus for Higher Level and Ordinary Level* (≈ Grades 10-11) (see 4.1.1.d-f, 4.2.1.a-g, 4.3.1.a)
    6. **Ontario, Canada:** *The Ontario Curriculum, English,* 2007 (Grades 11-12) (see 1.7 & 1.8, Grade 12 Oral Communication)
    7. **Victoria, Australia:** *Victorian Certificate of Education Study Design: English/English as a Second Language*, 2007 (≈ Grades 11-12) (see Unit 2, Outcome 3, Key Skill bullets 1 and 2)

- A counterpart of this standard also appears in the English language arts standards of the following :

    1. **England:** *English Programme of Study* for Key stage 4, 2005 (≈ Grades 10-11) (see 1.4.c-d, 2.1.g)
    2. **Singapore:** *English Language Syllabus 2001*, Learning Outcomes for O-Levels (≈ Grades 10-11) (see 9.2.c, 9.3.b)

Illustrative Alignment with State and Other Standards

Evidence for Individual Reading, Writing, and Speaking and Listening Standards

- *Out of Many, One: Towards Rigorous Common Core Standards from the Ground Up*. (2008). Washington, DC: Achieve. 2008. (see E4, in 12 of 12 states analyzed)
- Intersegmental Committee of the Academic Senates (ICAS). (2002) *Academic Literacy: A Statement of Competencies Expected of Students Entering California's Public Colleges and Universities*. (see Fostering Habits of Mind Essential for Success, bullet 5; Listening and Speaking, Listening, bullet 2)
- A counterpart of this standard appears in the English language arts standards from the following states:

    1. **California**: *English-Language Arts Content Standards for California Public Schools*. (see 1.12, 1.13, Grades 9-10)
    2. **Massachusetts**: *English Language Arts Curriculum Framework*, June 2001. (see 3.15)
    3. **Texas:** *Texas College Readiness Standards*, (2008). (see pg. 4-5, Listening, A.1-3)

Speaking 7. Ask relevant questions to clarify points and challenge ideas.

College Readiness

Career Readiness

Illustrative International Benchmarks

- A counterpart of this standard appears in the English language arts standards and learning outcomes from the following high performing countries, as defined by their top 10 ranking on the 2006 Programme of International Student Assessment (PISA) Reading Scale:

    1. **British Columbia, Canada:** *English Language Arts Integrated Resource Package,* Prescribed Learning Outcomes, 2007 (Grade 12) (see A7)

- A counterpart of this standard also appears in the English language arts standards of the following :

    1. **England:** *English Programme of Study for Key stage 4*, 2005 (≈ Grades 10-11) (see 2.1.e)

Illustrative Alignment with State and Other Standards

- Intersegmental Committee of the Academic Senates (ICAS). (2002) *Academic Literacy: A Statement of Competencies Expected of Students Entering California's Public Colleges and Universities*. (see Fostering Habits of Mind Essential for Success, bullet 7; Listening and Speaking, Speaking, bullets 1 and 3)
- A counterpart of this standard appears in the English language arts standards from the following states:

    1. **Massachusetts:** *English Language Arts Curriculum Framework*, June 2001. (see General Standard 2: Questioning, Listening, and Contributing)

Speaking 8. Respond constructively to advance a discussion and build on the input of others.

Evidence for Individual Reading, Writing, and Speaking and Listening Standards

College Readiness

Career Readiness

- *Missouri Career Prep Certificate Program Planning Guide,* Missouri Department of Elementary and Secondary Education. (see pg. A5, Communication: Written, Verbal, and Listening-Performance skill 2)
- Qualifications and Curriculum Authority. (2007). *Functional Skills and Standards.* (see pg. 12, Speaking and Listening Level 2, bullets 1 and 4)

Illustrative International Benchmarks

- A counterpart of this standard appears in the English language arts standards and learning outcomes from the following high performing countries, as defined by their top 10 ranking on the 2006 Programme of International Student Assessment (PISA) Reading Scale:

    1. **Hong Kong**: *English Language Curriculum and Assessment Guide*, 2007. (≈Grades 10-11) (see Speaking, "Participate Effectively…", bullets 3-4 and 6)

- A counterpart of this standard also appears in the English language arts standards of the following :

    1. **England**: *English Programme of Study for Key stage 4*, 2005 (≈ Grades 10-11) (see 2.1.d-e)

Illustrative Alignment with State and Other Standards

- Intersegmental Committee of the Academic Senates (ICAS). (2002) *Academic Literacy: A Statement of Competencies Expected of Students Entering California's Public Colleges and Universities.* (see Fostering Habits of Mind Essential for Success, bullet 7; Listening and Speaking, Speaking, bullets 1-4)
- A counterpart of this standard appears in the English language arts standards from the following states:

    1. **Massachusetts**: *English Language Arts Curriculum Framework*, June 2001. (see General Standard 1: Discussion; General Standard 2: Questioning, Listening, and Contributing)
    2. **Texas:** *Texas College Readiness Standards*, (2008). (see pg. 4-5, Listening, B.1)

College and Career Readiness Standards for Mathematics

Draft for Review and Comment

September 21, 2009

DRAFT

Contents 1

Introduction 2-4

How Evidence Informed Decisions in Drafting the Standards 5, 6

College and Career Readiness Standards for Mathematics 7-19

- Mathematical Practice 8
- Number 9
- Quantity 10
- Expressions 11
- Equations 12
- Functions 13
- Modeling 14
- Shape 15
- Coordinates 16
- Probability 17
- Statistics 18
- Example Tasks online at www.corestandards.org

Sample of Works Consulted 19-22

DRAFT

Introduction

The *College and Career Readiness Standards for Mathematics* consist of three interconnected parts: a Standard for Mathematical Practice, ten Standards for Mathematical Content, and a set of Example Tasks.

The Standard for Mathematical Practice has six Core Practices that describe the way proficient students approach mathematics. Proficient students attend to precision, construct viable arguments, make sense of complex problems and persevere in solving them, look for hidden structure, note regularity in repeated reasoning, and use technology intelligently. This approach to mathematics is an essential part of being ready for college and career.

The Standards for Mathematical Content form the backbone of this document. Each of these ten standards consists of Core Concepts, Core Skills, and a description of the student's Coherent Understanding. Students who encounter the subject with a focus on coherence will be better able to learn more mathematics at a deeper level and be better able to access and apply the mathematics they know. The ten Standards for Mathematical Content pull together topics previously studied and look ahead toward topics in further coursework and training programs.

The Standards for Mathematical Content are designed to draw greater attention to powerful organizing principles in mathematics, such as functional relationships or the laws of arithmetic. They also allow important distinctions to be made more clearly, such as that between Expressions and Equations. And they surface the deep connections that often underlie mathematical coherence, such as the blending of algebra with geometry represented by Coordinates. These ten are not categories or buckets of topics to cover; they are standards. They describe the coherence students need and deserve as they go forward to their mathematical futures.

The third component of the *College and Career Readiness Standards for Mathematics* is a Web-based collection of Example Tasks that exemplifies the variety of performances required. High standards demand that students *use* their knowledge, skills and good practices to solve problems from a variety of contexts, both within mathematics and from the world outside. Example Tasks exemplify the range and variety of use that is expected. Teachers and designers of curriculum and assessment will find in the collection of examples a guide to what these standards mean. Over time, the collection of tasks will grow.

Together, these three components establish an evidence-based standard for college and career readiness. The *College and Career Readiness Standards for Mathematics* have been created with attention to the expectations of the highest achieving countries. They have focus and depth, emphasizing the understanding of and connections among topics that are most important for success regardless of a student's pathway after reaching these standards.

A primary goal of developing these standards is to enable students to achieve *mathematical proficiency* (see sidebar). Students are expected to understand the knowledge described in the Core Concepts and in the Coherent Understandings at a depth that enables them to reason with that knowledge—to analyze, interpret and evaluate mathematical problems, make deductions, and justify results. The Core Skills are meant to be used strategically and adaptively to solve problems. Students' knowledge and skills come to life and take their value when melded with the ways they approach mathematics—as described by the Core Practices.

The specific verbs used to describe concepts and skills in these standards are not meant to limit or indicate levels of any taxonomy. Although using verbs to indicate levels of depth has been a common practice in this country's standards writing, high performing nations do not use verbs in this way. They describe depth and practices first in separate sections of their syllabi. We have adopted the high performing countries' practice of focusing on a clear statement of what mathematics should be learned when writing standards for knowledge and skills.

Instruction, curriculum and assessment designed to achieve these standards should range over all strands of proficiency in *Adding It Up*, all depths of knowledge in Norman L. Webb's Depth of Knowledge taxonomy, all levels of Bloom's Taxonomy, and all levels of cognitive demand. In the Core Skills and Core Practices we have sometimes used terms like "explore" to indicate a lighter treatment with a goal of awareness and experience rather than proficiency. We have used Example Tasks to show the depth of knowledge and deployment of skills expected.

From *Adding it up: Helping children learn mathematics* (National Research Council, 2001, p. 116):

Recognizing that no term captures completely all aspects of expertise, competence, knowledge, and facility in mathematics, we have chosen mathematical proficiency to capture what we believe is necessary for anyone to learn mathematics successfully. Mathematical proficiency, as we see it, has five components, or strands:

- conceptual understanding—comprehension of mathematical concepts, operations, and relations
- procedural fluency—skill in carrying out procedures flexibly, accurately, efficiently, and appropriately
- strategic competence—ability to formulate, represent, and solve mathematical problems
- adaptive reasoning—capacity for logical thought, reflection, explanation, and justification
- productive disposition—habitual inclination to see mathematics as sensible, useful, and worthwhile, coupled with a belief in diligence and one's own efficacy.

These standards are measurable; that is, they are observable and verifiable through the broad spectrum of student performances that may be assessed during classroom observation, school-based examinations and large-scale testing. The *College and Career Readiness Standards for Mathematics* can guide the development of assessment frameworks that distribute the assessment responsibilities across multiple levels of the educational system: state, district, school and teacher.

Students reaching these levels will be prepared for non-remedial college mathematics courses and will be prepared for training programs for career-level jobs; however, the *College and Career Readiness Standards for Mathematics* should not be construed as grade twelve exit standards. Students interested in STEM fields, and those who wish to go beyond for other reasons, will need to reach these standards before their senior year in order to have time to include additional mathematics. A number of pathways for advanced learning are possible and may be integrated throughout the high school experience and beyond.

The Common Core State Standards Initiative

The *College and Career Readiness Standards for Mathematics* will anchor the next phase of the Common Core State Standards Initiative: development of K–12 Mathematics Standards. Those K–12 Standards are in turn expected to guide the development of a next generation of assessments, developed collaboratively by multiple states. The K–12 Mathematics Standards will serve as a guide and tool for aligning instruction, curriculum, assessment, teacher supports, and systems of accountability. To ensure alignment, the Standard for Mathematical Practice, the Standards for Mathematical Content, and the Example Tasks should all be taken into account.

Overview of the Mathematical Practice Standard

Attend to precision.
Construct viable arguments.
Make sense of complex problems and persevere in solving them.
Look for structure.
Look for and express regularity in repeated reasoning.
Make strategic decisions about the use of technological tools.

Overview of the Mathematical Content Standards

Number. Procedural fluency in operations with real numbers and strategic competence in approximation are grounded in an understanding of place value. The rules of arithmetic govern operations on numbers and extend to operations in algebra.

Quantity. A quantity is an attribute of an object or phenomenon that can be specified using a number and a unit, such as 2.7 centimeters, 42 questions or 28 miles per gallon.

Expressions. Expressions use numbers, variables and operations to describe computations. The rules of arithmetic, the use of parentheses and the conventions about order of operations assure that the computation has a well-determined value.

Equations. An equation is a statement that two expressions are equal. Solutions to an equation are the values of the variables in it that make it true.

Functions. Functions model situations where one quantity determines another. Because nature and society are full of dependencies, functions are important tools in the construction of mathematical models.

Modeling. Modeling uses mathematics to help us make sense of the real world—to understand quantitative relationships, make predictions, and propose solutions.

Shape. From only a few axioms, the deductive method of Euclid generates a rich body of theorems about geometric objects, their attributes and relationships.

Coordinates. Applying a coordinate system to Euclidean space connects algebra and geometry, resulting in powerful methods of analysis and problem solving.

Probability. Probability assesses the likelihood of an event in a situation that involves randomness. It quantifies the degree of certainty that an event will happen as a number from 0 through 1.

Statistics. Decisions or predictions are often based on data—numbers in context. These decisions or predictions would be easy if the data always sent a clear message, but the message is often obscured by variability in the data.

How Evidence Informed Decisions in Drafting the Standards

The Common Core State Standards Initiative builds on a generation of standards efforts led by states and national organizations. On behalf of the states, we have taken a step toward the next generation of standards that are aligned to college- and career-ready expectations and are internationally benchmarked. These standards are grounded in evidence from many sources that shows that the next generation of standards in mathematics must be focused on deeper, more thorough understanding of more fundamental mathematical ideas and higher mastery of these fewer, more useful skills.

The evidence that supports this new direction comes from a variety of sources. International comparisons show that high performing countries focus on fewer topics and that the U.S. curriculum is "a mile wide and an inch deep." Surveys of college faculty show the need to shift away from high school courses that merely survey advanced topics, toward courses that concentrate on developing an understanding and mastery of ideas and skills that are at the core of advanced mathematics. Reviews of data on student performance show the large majority of U.S. students are not mastering the mile wide list of topics that teachers cover.

The evidence tells us that in high performing countries like Singapore, the gap between what is taught and what is learned is relatively smaller than in Malaysia or the U.S. states. Malaysia's standards are higher than Singapore's, but their performance is much lower. One could interpret the narrower gap in Singapore as evidence that they actually use their standards to manage instruction; that is, Singapore's standards were set within the reach of hard work for their system and their population. Singapore's Ministry of Education flags its webpage with the motto, "Teach Less, Learn More." We accepted the challenge of writing standards that could work that way for U.S. teachers and students: By providing focus and coherence, we could enable more learning to take place at all levels.

However, a set of standards cannot be simplistically "derived" from any body of evidence. It is more accurate to say that we used evidence to inform our decisions. A few examples will illustrate how this was done.

For example, systems of linear equations are covered by all states, yet students perform surprisingly poorly on this topic when assessed by ACT. We determined that systems of linear equations have high coherence value, mathematically; that this topic is included by all high performing nations; and that it has moderately high value to college faculty. Result: We included it in our standards.

A different and more complex pattern of evidence appeared with families of functions. Again we found that students performed poorly on problems related to many advanced functions (trigonometric, logarithmic, quadratic, exponential, and so on). Again we found that a number of states cover them, even though college faculty rated them lower in value. High performing countries include this material, but with different degrees of demand. We decided that we had to carve a careful line through these topics so that limited teaching resources could focus where most important. We decided that students should

develop deep understanding and mastery of linear and exponential functions. They should also have familiarity with other families of functions, and apply their algebraic, modeling and problem solving skills to them—but not develop in-depth technical mastery and understanding. Thus we defined two distinct levels of attention and identified which families of functions got which level of attention.

Why were exponential functions selected for intensive focus in the Functions standard instead of, say, quadratic functions? What tipped the balance was the high coherence value of exponential functions in supporting modeling and their wide utility in work and life. Quadratic functions were also judged to be well supported by expectations defined under Expressions and Equations.

These examples indicate the kind of reasoning, informed by evidence, that it takes to design standards aligned to the demands of college and career readiness in a global economy. We considered inclusion in international standards, requirements of college and the workplace, surveys of college faculty and the business community, and other sources of evidence. As we navigated these sometimes conflicting signals, we always remained aware of the finiteness of instructional resources and the need for deep mathematical coherence in the standards.

At the end of this document, there is a listing of a number of sources that played a role in the deliberations described above and more generally throughout the process to inform our decisions. A hyperlinked version of the bibliography can be found online at www.corestandards.org.

DRAFT

College and Career Readiness Standards for Mathematics

DRAFT

Mathematical Practice

Proficient students expect mathematics to make sense. They take an active stance in solving mathematical problems. When faced with a non-routine problem, they have the courage to plunge in and try something, and they have the procedural and conceptual tools to carry through. They are experimenters and inventors, and can adapt known strategies to new problems. They think strategically.

Students who engage in these practices discover ideas and gain insights that spur them to pursue mathematics beyond the classroom walls. They learn that effort counts in mathematical achievement.[a] These are practices that expert mathematical thinkers encourage in apprentices. Encouraging these practices in our students should be as much a goal of the mathematics curriculum as is teaching specific content topics and procedures.[b] Taken together with the Standards for Mathematical Content, they support productive entry into college courses or career pathways.

Core Practices · Students can and do:

1 Attend to precision.

Mathematically proficient students organize their own ideas in a way that can be communicated precisely to others, and they analyze and evaluate others' mathematical thinking and strategies noting the assumptions made. They clarify definitions. They state the meaning of the symbols they choose, are careful about specifying units of measure and labeling axes, and express their answers with an appropriate degree of precision. Rather than saying, "let v be speed and let t be time," they would say "let v be the speed in meters per second and let t be the elapsed time in seconds from a given starting time." They recognize that when someone says the population of the United States in June 2008 was 304,059,724, the last few digits indicate unwarranted precision.

2 Construct viable arguments.

Mathematically proficient students understand and use stated assumptions, definitions and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They break things down into cases and can recognize and use counterexamples. They use logic to justify their conclusions, communicate them to others and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose.

3 Make sense of complex problems and persevere in solving them.

Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They consider analogous problems, try special cases and work on simpler forms. They evaluate their progress and change course if necessary. They try putting algebraic expressions into different forms or try changing the viewing window on their calculator to get the information they need. They look for correspondences between equations, verbal descriptions, tables, and graphs. They draw diagrams of relationships, graph data, search for regularity and trends, and construct mathematical models. They check their answers to problems using a different method, and they continually ask themselves, "Does this make sense?"

4 Look for and make use of structure.

Mathematically proficient students look closely to discern a pattern. For example, in $x^2 + 5x + 6$ they can see the 5 as $2 + 3$ and the 6 as 2×3. They recognize the significance of an existing line in a geometric figure and can add an auxiliary line to make the solution of a problem clear. They also can step back for an overview and shift perspective. They can see complicated things, such as some algebraic expressions, as single objects. For example, by seeing $5 - 3(x - y)^2$ as 5 minus a positive number times a square, they see that it cannot be more than 5 for any real numbers x and y.[b]

5 Look for and express regularity in repeated reasoning.

Mathematically proficient students pay attention to repeated calculations as they carry them out, and look both for general algorithms and for shortcuts. For example, by paying attention to the calculation of slope as they repeatedly check whether points are on the line through (1, 2) with slope 3, they might abstract the equation $(y - 2)/(x - 1) = 3$. Noticing the regularity in the way terms cancel in the expansions of $(x - 1)(x + 1)$, $(x - 1)(x^2 + x + 1)$, and $(x - 1)(x^3 + x^2 + x + 1)$ leads to the general formula for the sum of a geometric series. As they work through the solution to a problem, proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.[b]

6 Make strategic decisions about the use of technological tools.

Mathematically proficient students consider the available tools when solving a mathematical problem, whether pencil and paper, ruler, protractor, graphing calculator, spreadsheet, computer algebra system, statistical package, or dynamic geometry software. They are familiar enough with all of these tools to make sound decisions about when each might be helpful. They use mathematical understanding and estimation strategically, attending to levels of precision, to ensure appropriate levels of approximation and to detect possible errors. They are able to use these tools to explore and deepen their understanding of concepts.

(a) For the importance of students' beliefs about effort, see the National Mathematics Advisory Panel's Report of the Task Group on Learning Processes, p. 4-10 (2008). (b) Cuoco, A., Goldenberg, E. P., and Mark, J., *Journal of Mathematical Behavior*, 15 (4), 375-402, 1996; *Focus in High School Mathematics*. Reston, VA: NCTM, in press; Harel, G., What is Mathematics? A Pedagogical Answer to a Philosophical Question. In R. B. Gold & R. Simons (Eds.), *Current Issues in the Philosophy of Mathematics From the Perspective of Mathematicians*, Mathematical Association of America, 2008.

Number

Core Concepts · Students understand that:

A The real numbers include the rational numbers and are in one-to-one correspondence with the points on the number line.

B Quantities can be compared using division, yielding rates and ratios.

C A fraction can represent the result of dividing the numerator by the denominator; equivalent fractions have the same value.

D Place value and the rules of arithmetic form the foundation for efficient algorithms.

A Coherent Understanding of Number. Procedural fluency in operations with real numbers and strategic competence in approximation are grounded in an understanding of place value. The rules of arithmetic govern operations on numbers and extend to operations in algebra:

- Numbers can be added in any order with any grouping and multiplied in any order with any grouping.
- Adding 0 and multiplying by 1 both leave a number unchanged.
- All numbers have additive inverses, and all numbers except zero have multiplicative inverses.
- Multiplication distributes over addition.

Subtraction and division are defined in terms of addition and multiplication, so are also governed by these rules.

The place value system bundles units into 10s, then 10s into 100s, and so on, providing an efficient way to name large numbers. Subdividing in a similar way extends this to the decimal system, which provides an address system for locating all real numbers on the number line with arbitrarily high accuracy. Place value is the basis for efficient algorithms, reducing much computation to single-digit arithmetic. Mental computation strategies also make opportunistic use of the rules of arithmetic, as when the product 5×177×2 is computed at a glance to obtain 1770, rather than methodically working from left to right.

An estimate may be more appropriate than an exact value, for example, when you want to know the number of calories in a meal. Often a result is reported using fewer digits than were calculated. A mature number sense includes having rules of thumb about how much accuracy is appropriate and understanding that accuracy to more than a few decimal places often takes substantial effort. Estimation and approximation are also useful in checking calculations.

Rational numbers represented as fractions can be located on the number line by seeing them as numbers expressed in different units; for example, 3/5 is 3 units, where each unit is 1/5. However, rational numbers do not fill out the number line. There are also irrational numbers, such as π or $\sqrt{2}$. Each point on the number line then corresponds to a real number that is either rational or irrational.

Connections to Expressions, Functions and Coordinates. The rules of arithmetic govern the manipulations of expressions and functions. Two perpendicular number lines define the coordinate plane.

Core Skills · Students can and do:

1 Compare numbers and make sense of their magnitude.

Include positive and negative numbers expressed as fractions, decimals, powers, and roots. Limit to square and cube roots. Include very large and very small numbers and the use of scientific notation.

2 Know when and how to use standard algorithms, and perform them flexibly, accurately and efficiently.*

3 Use mental strategies and technology to formulate, represent and solve problems.**

4 Solve multi-step problems involving fractions and percentages.

Include situations such as simple interest, tax, markups/markdowns, gratuities and commissions, fees, percent increase or decrease, percent error, expressing rent as a percentage of take-home pay, and so on.

5 Use estimation and approximation to solve problems.

Include evaluating answers for their reasonableness, detecting errors, and giving answers to an appropriate level of precision.

* This aligns with the concept of procedural fluency as in the National Research Council report *Adding it up: Helping children learn mathematics*. Specifically, "*Procedural fluency* refers to knowledge of procedures, knowledge of when and how to use them appropriately, and skill in performing them flexibly, accurately, and efficiently" (p. 121).

** This aligns with the concept of strategic competence as described in *Adding it up*. "*Strategic competence* refers to the ability to formulate mathematical problems, represent them, and solve them" (p. 124).

Quantity

Core Concepts · Students understand that:

A The value of a quantity is not specified unless the units are named or understood from the context.

B Quantities can be added and subtracted only when they are of the same type (length, area, speed, etc.).

C Quantities can be multiplied or divided to create new types of quantities, called derived quantities.

A Coherent Understanding of Quantity. A quantity is an attribute of an object or phenomenon that can be specified using a number and a unit, such as 2.7 centimeters, 42 questions or 28 miles per gallon.

The length of a football field and the speed of light are both quantities. If we choose units of miles per second, then the speed of light has a value of approximately 186,000 miles per second. But the speed of light need not be expressed in miles per second; it may be approximated by 3×10^8 meters per second or in any other unit of speed. Bare numerical values such as 186,000 do not describe quantities unless they are paired with units.

Speed (distance divided by time), rectangular area (length multiplied by length), density (mass divided by volume), and population density (number of people divided by land area) are examples of derived quantities, obtained by multiplying or dividing quantities.

It can make sense to add two quantities, such as when a child 51 inches tall grows 3 inches to become 54 inches tall. To be added or subtracted, quantities must be of the same type (length, area, speed, etc.); to add or subtract their values, the quantities must be expressed in the same units. Converting quantities to have the same units is like converting fractions to have a common denominator before adding or subtracting. But, even when quantities have the same units it does not always make sense to add them. For example, if a wooded park with 300 trees per acre is next to a field with 30 trees per acre, they do not have 330 trees per acre.

Doing algebra with units in a calculation reveals the units of the answer, and can help reveal a mistake if, for example, the answer comes out to be a distance when it should be a speed.

Connections to Number, Expressions, Equations, Functions, Modeling and Statistics. Operations described under Number and Expressions govern the operations one performs on quantities, including the units involved. Quantity is an integral part of any application of mathematics, and has connections to solving problems using data, equations, functions and modeling.

Core Skills · Students can and do:

1 Know when and how to convert units in computations.

Include the addition and subtraction of quantities of the same type expressed in different units; averaging data given in mixed units; converting units for derived quantities such as density and speed.

2 Use and interpret quantities and units correctly in algebraic formulas.

Include specifying units when defining variables and attending to units when writing expressions and equations.

3 Use and interpret quantities and units correctly in graphs and data displays.

Include function graphs, data tables, scatterplots and other visual displays of dimensioned data.

4 Use units as a way to understand problems and to guide the solution of multi-step problems.

Include examples such as acceleration; currency conversions; people-hours; social science measures, such as deaths per 100,000; and general rates, such as points per game.

Expressions

Core Concepts · Students understand that:

A Expressions are constructions built up from numbers, variables, and operations, which have a numerical value when each variable is replaced with a number.

B Complex expressions are made up of simpler expressions.

C The rules of arithmetic can be applied to transform an expression without changing its value.

D Rewriting expressions in equivalent forms serves a purpose in solving problems.

A Coherent Understanding of Expressions. Expressions use numbers, variables and operations to describe computations. The rules of arithmetic, the use of parentheses and the conventions about order of operations assure that the computation has a well-determined value.

Reading an expression with comprehension involves analysis of its underlying structure, which may suggest a different but equivalent way of writing it that exhibits some different aspect of its meaning. For example, $p + 0.05p$ can be interpreted as the addition of a 5% tax to a price p. But rewriting $p + 0.05p$ as $1.05p$ shows that adding a tax is the same as multiplying by a constant factor.

Algebraic manipulations are based on the conventions of algebraic notation and the rules of arithmetic. Heuristic mnemonic devices are not a substitute for procedural fluency. For example, factoring, expanding, collecting like terms, the rules for interpreting minus signs next to parenthetical sums, and adding fractions with a common denominator are all instances of the distributive law; the definitions for negative and rational exponents are based on the extension of the exponent laws for positive integers. The laws of exponents connect multiplication of numbers to addition of exponents and thus express the deep relationship between addition and multiplication captured by the parallel nature of the rules of arithmetic for these operations.

Complex expressions are made up of simpler expressions using arithmetic operations and substitution. When simple expressions within more complex expressions are treated as single quantities, or chunks, the underlying structure of the larger expression may be more evident.

Connections to Equations and Functions. Setting expressions equal to each other leads to equations. Expressions can define functions of the variables that appear in them, with equivalent expressions defining the same function.

Core Skills · Students can and do:

1 See structure in expressions.

For example, recognize: that the expressions $x^4 - y^4$ and $(x+y)^2 - (x-y)^2$ are differences of squares; that there are different ways to rewrite the latter expression, e.g., by expanding and collecting like terms or by factoring as a difference of squares; that p is a common factor in $p + 0.025p$; that an expression in the form $(x-3)^2 + 14$ reveals its minimum value.

2 Manipulate simple expressions.

Show procedural fluency in the following cases: factoring out common terms; factoring expressions with quadratic structure; writing in standard form sums, differences, and products of polynomials. Include completing the square and rewriting in standard form sums, differences, products, and quotients of simple rational expressions; rewriting expressions with negative exponents and those involving square or cube roots of a single term involving exponents.

3 Define variables and write an expression to represent a quantity in a problem.

Include contextual problems.

4 Interpret an expression that represents a quantity in terms of the context.

Include interpreting parts of an expression, such as terms, factors and coefficients.

Equations

Core Concepts · Students understand that:

A An equation is a statement that two expressions are equal.

B The solutions of an equation are the values of the variables that make the resulting numerical statement true.

C The steps in solving an equation are guided by understanding and justified by logical reasoning.

D Equations not solvable in one number system may have solutions in a larger number system.

A Coherent Understanding of Equations. An equation is a statement that two expressions are equal. Solutions to an equation are the values of the variables in it that make it true. If the equation is true for all values of the variables, then we call it an identity; identities are often discovered by manipulating one expression into another.

The solutions of an equation in one variable form a set of numbers; the solutions of an equation in two variables form a set of ordered pairs, which can be graphed in the plane. Equations can be combined into systems to be solved simultaneously.

An equation can be solved by successively transforming it into one or more simpler equations. The process is governed by deductions based on the properties of equality. For example, one can add the same constant to both sides without changing the solutions, but squaring both sides might lead to extraneous solutions. Strategic competence in solving includes looking ahead for productive manipulations and anticipating the nature and number of solutions.

Some equations have no solutions in a given number system, stimulating the formation of expanded number systems (integers, rational numbers, real numbers and complex numbers).

A formula is a type of equation. The same solution techniques used to solve equations can be used to rearrange formulas. For example, the formula for the area of a trapezoid, $A = \left(\frac{b_1+b_2}{2}\right)h$, can be solved for h using the same deductive process.

Inequalities can be solved in much the same way as equations. Many, but not all, of the properties of equality extend to the solution of inequalities.

Connections to Functions, Coordinates, and Modeling. Equations in two variables may define functions. Asking when two functions have the same value leads to an equation; graphing the two functions allows for the approximate solution of the equation. Equations of lines involve coordinates, and converting verbal descriptions to equations is an essential skill in modeling.

Core Skills · Students can and do:

1 Understand a problem and formulate an equation to solve it.

Extend to inequalities and systems.

2 Solve equations in one variable using manipulations guided by the rules of arithmetic and the properties of equality.

Solve linear equations with procedural fluency. For quadratic equations, include solution by inspection, by factoring, or by using the quadratic formula. Understand that the quadratic formula comes from completing the square. Include simple absolute value equations solvable by direct inspection and by understanding the interpretation of absolute value as distance.

3 Rearrange formulas to isolate a quantity of interest.

Exclude cases that require extraction of roots or inverse functions.

4 Solve systems of equations.

Focus on pairs of simultaneous linear equations in two variables. Include algebraic techniques, graphical techniques and solving by inspection.

5 Solve linear inequalities in one variable and graph the solution set on a number line.

Emphasize solving the associated equality and determining on which side of the solution of the associated equation the solutions to the inequality lie.

6 Graph the solution set of a linear inequality in two variables on the coordinate plane.

Emphasize graphing the associated equation, using a dashed or solid line as appropriate and shading to indicate the half-plane on which the solutions to the inequality lie.

Functions

Core Concepts · Students understand that:

A A function is a rule, often defined by an expression, that assigns a unique output for every input.

B The graph of a function f is a set of ordered pairs $(x, f(x))$ in the coordinate plane.

C Functions model situations where one quantity determines another.

D Common functions occur in families where each member describes a similar type of dependence.

A Coherent Understanding of Functions. Functions model situations where one quantity determines another. For example, the return on $10,000 invested at an annualized percentage rate of 4.25% is a function of the length of time the money is invested. Because nature and society are full of dependencies between quantities, functions are important tools in the construction of mathematical models.

In school mathematics, functions usually have numerical inputs and outputs and are often defined by an algebraic expression. For example, the time in hours it takes for a plane to fly 1000 miles is a function of the plane's average ground speed in miles per hour, v; the rule $T(v) = 1000/v$ expresses this relationship algebraically and defines a function whose name is T.

The set of possible inputs to a function is called its domain. We often infer the domain to be all inputs for which the expression defining a function has a value, or for which the function makes sense in a given context. The graph of a function is a useful way of visualizing the relationship the function models, and manipulating the expression for a function can throw light on the function's properties.

Two important families of functions characterized by laws of growth are linear functions, which grow at a constant rate, and exponential functions, which grow at a constant percent rate. Linear functions with an initial value of zero describe proportional relationships.

Connections to Expressions, Equations, Modeling and Coordinates. Determining an output value for a particular input involves evaluating an expression; finding inputs that yield a given output involves solving an equation. The graph of a function f is the same as the solution set of the equation $y = f(x)$. Questions about when two functions have the same value lead to equations, whose solutions can be visualized from the intersection of the graphs. Since functions describe relationships between quantities, they are frequently used in modeling. Sometimes functions are defined by a recursive process, which can be modeled effectively using a spreadsheet or other technology.

Core Skills · Students can and do:

1 Recognize proportional relationships and solve problems involving rates and ratios.

Include being able to express proportional relationships as functions.

2 Describe the qualitative behavior of common types of functions using graphs and tables.

Identify: intercepts; intervals where the function is increasing, decreasing, positive or negative; relative maximums and minimums; symmetries; end behavior; and periodicity. Use technology to explore the effects of parameter changes on the graphs of linear, power, quadratic, polynomial, simple rational, exponential, logarithmic, sine and cosine, absolute value and step functions.

3 Analyze functions using symbolic manipulation.

Include slope-intercept and point-slope form of linear functions; vertex form of quadratic functions to identify symmetry and find maximums and minimums; factored form to find zeros. Use manipulations as described under Expressions.

4 Use the families of linear and exponential functions to solve problems.

For linear functions $f(x) = mx + b$, understand b as the intercept or initial value and m as the slope or rate of change. For exponential functions $f(x) = a \cdot b^x$, understand a as the intercept or initial value and b as the growth factor.

5 Find and interpret rates of change.

Compute the rate of change of linear functions and make qualitative observations about how the rate of change varies for nonlinear functions.

Modeling

Core Concepts · Students understand that:

A Mathematical models involve choices and assumptions that abstract key features from situations to help us solve problems.

B Even very simple models can be useful.

A Coherent Understanding of Modeling. Modeling uses mathematics to help us make sense of the real world—to understand quantitative relationships, make predictions, and propose solutions.

A model can be very simple, such as a geometric shape to describe a physical object like a coin. Even so simple a model involves making choices. It is up to us whether to model the solid nature of the coin with a three-dimensional cylinder, or whether a two-dimensional disk works well enough for our purposes. For some purposes, we might even choose to adjust the right circular cylinder to model more closely the way the coin deviates from the cylinder.

In any given situation, the model we devise depends on a number of factors: How precise an answer do we want or need? What aspects of the situation do we most need to understand, control, or optimize? What resources of time and tools do we have? The range of models we can create and analyze is constrained as well by the limitations of our mathematical and technical skills. For example, modeling a physical object, a delivery route, a production schedule, or a comparison of loan amortizations each requires different sets of tools. Networks, spreadsheets and algebra are powerful tools for understanding and solving problems drawn from different types of real-world situations. One of the insights provided by mathematical modeling is that essentially the same mathematical structure might model seemingly different situations.

The basic modeling cycle is one of (1) identifying the key features of a situation, (2) creating geometric, algebraic or statistical objects that describe key features of the situation, (3) analyzing and performing operations on these objects to draw conclusions and (4) interpreting the results of the mathematics in terms of the original situation. Choices and assumptions are present throughout this cycle.

Connections to Quantity, Equations, Functions, Shape, Coordinates and Statistics. Modeling makes use of shape, data, graphs, equations and functions to represent real-world quantities and situations.

Core Skills · Students can and do:

1 Model numerical situations.

Include readily applying the four basic operations in combination to solve multi-step quantitative problems with dimensioned quantities; making estimates to introduce numbers into a situation and get problems started; recognizing proportional or near-proportional relationships and analyzing them using characteristic rates and ratios.

2 Model physical objects with geometric shapes.

Include common objects that can reasonably be idealized as two- and three-dimensional geometric shapes. Identify the ways in which the actual shape varies from the idealized geometric model.

3 Model situations with equations and inequalities.

Include situations well described by a linear inequality in two variables or a system of linear inequalities defining a region in the plane.

4 Model situations with common functions.

Include situations well described by linear, quadratic or exponential functions; and situations that can be well described by inverse variation ($f(x) = k/x$). Include identifying a family of functions that models features of a problem, and identifying a particular function of that family and adjusting it to fit by changing parameters. Understand the recursive nature of situations modeled by linear and exponential functions.

5 Model situations using probability and statistics.

Include using simulations to model probabilistic situations; describing the shape of a distribution of values and summarizing a distribution with measures of center and variability; modeling a bivariate relationship using a trend line or a regression line.

6 Interpret the results of applying a model and compare models for a particular situation.

Include realizing that models seldom fit exactly and so there can be error; identifying simple sources of error and being careful not to over-interpret models. Include recognizing that there can be many models that relate to a situation, that they can capture different aspects of the situation, that they can be simpler or more complex, and that they can have a better or worse fit to the situation and the questions being asked.

DRAFT

Shape

Core Concepts · Students understand that:

A Shapes and their parts, attributes, and measurements can be analyzed deductively.*

B Congruence, similarity, and symmetry can be analyzed using transformations.

C Mathematical shapes model the physical world, resulting in practical applications of geometry.

D Right triangles and the Pythagorean theorem are central to geometry and its applications, including trigonometry.

A Coherent Understanding of Shape. From only a few axioms, the deductive method of Euclid generates a rich body of theorems about geometric objects, their attributes and relationships. Once understood, those attributes and relationships can be applied in diverse practical situations—interpreting a schematic drawing, estimating the amount of wood needed to frame a sloping roof, rendering computer graphics, or designing a sewing pattern for the most efficient use of material.

Understanding the attributes of geometric objects often relies on measurement: a circle is a set of points in a plane at a fixed distance from a point; a cube is bounded by six squares of equal area; when two parallel lines are crossed by a transversal, pairs of corresponding angles are congruent.

The concepts of congruence, similarity and symmetry can be united under the concept of geometric transformation. Reflections and rotations each explain a particular type of symmetry, and the symmetries of an object offer insight into its attributes—as when the reflective symmetry of an isosceles triangle assures that its base angles are congruent. Applying a scale transformation to a geometric figure yields a similar figure. The transformation preserves angle measure, and lengths are related by a constant of proportionality. If the constant of proportionality is one, distances are also preserved (so the transformation is a rigid transformation) and the figures are congruent.

The definitions of sine, cosine and tangent for acute angles are founded on right triangle similarity, and, with the Pythagorean theorem, are fundamental in many practical and theoretical situations.

Connections to Coordinates, Functions and Modeling. The Pythagorean theorem is a key link between geometry, measurement and distance in the coordinate plane. Parameter changes in families of functions can be interpreted as transformations applied to their graphs and those functions, as well as geometric objects in their own right, can be used to model contextual situations.

*In this document, deductive analysis aligns with the notion of adaptive reasoning as defined in *Adding it Up*, and includes empirical exploration, informal justification, and formal proof.

Core Skills · Students can and do:

1 Use multiple geometric properties to solve problems involving geometric figures.

Properties include: measures of interior angles of a triangle sum to 180°; vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; measures of supplementary angles sum to 180°; two lines parallel to a third are parallel to each other; points on a perpendicular bisector of a segment are exactly those equidistant from the segment's endpoints; and a line tangent to a circle is perpendicular to the radius meeting it.

2 Prove theorems, test conjectures and identify logical errors.

Include theorems establishing the properties in Core Skill 1 and other theorems about angles, parallel and perpendicular lines, similarity and congruence of triangles.

3 Construct and interpret representations of geometric objects.

Include classical construction techniques and construction techniques supported by modern technologies. Include moving between two-dimensional representations and the three-dimensional objects they represent, such as in schematics, assembly instructions, perspective drawings and multiple views.

4 Solve problems involving measurements.

Include measurement (length, angle measure, area, surface area, and volume) of a variety of figures and shapes in two- and three-dimensions. Compute measurements using formulas and by decomposing complex shapes into simpler ones.

5 Solve problems involving similar triangles and scale drawings.

Include computing actual lengths, areas and volumes from a scale drawing and reproducing a scale drawing at a different scale.

6 Apply properties of right triangles and right triangle trigonometry to solve problems.

Include using the Pythagorean theorem and properties of special right triangles, and applying sine, cosine and tangent to determine lengths and angle measures of right triangles. Use right triangles and their properties to solve real-world problems. Limit angle measures to degrees.

DRAFT

Coordinates

Core Concepts · Students understand that:

A Locations in the plane or in space can be specified by pairs or triples of numbers called coordinates.

B Coordinates link algebra with geometry and allow methods in one domain to solve problems in the other.

C The set of solutions to an equation in two variables forms a curve in the coordinate plane—such as a line, parabola, circle—and the solutions to systems of equations correspond to intersections of these curves.

A Coherent Understanding of Coordinates. Applying a coordinate system to Euclidean space connects algebra and geometry, resulting in powerful methods of analysis and problem solving.

Just as the number line associates numbers with locations in one dimension, a pair of perpendicular axes associates pairs of numbers with locations in two dimensions. This correspondence between numerical coordinates and geometric points allows methods from algebra to be applied to geometry and vice versa. The solution set of an equation becomes a geometric curve, making visualization a tool for doing and understanding algebra. Geometric shapes can be described by equations, making algebraic manipulation into a tool for geometric understanding, modeling and proof.

Coordinate geometry is a rich field for exploration. How does a geometric transformation such as a translation or reflection affect the coordinates of points? How is the geometric definition of a circle reflected in its equation?

Adding a third perpendicular axis associates three numbers with locations in three dimensions and extends the use of algebraic techniques to problems involving the three-dimensional world we live in.

Connections to Shape, Quantity, Equations and Functions. Coordinates can be used to reason about shapes. In applications, coordinate values often have units (such as meters and bushels). A one-variable equation of the form $f(x) = g(x)$ may be solved in the coordinate plane by finding intersections of the curves $y = f(x)$ and $y = g(x)$.

Core Skills · Students can and do:

1 Translate fluently between lines in the coordinate plane and their equations.

Include predicting visual features of lines by inspection of their equations, determining the equation of the line through two given points, and determining the equation of the line with a given slope passing through a given point.

2 Identify the correspondence between parameters in common families of equations and the location and appearance of their graphs.

Include common families of equations—the graphs of $Ax + By = C$, $y = mx + b$ and $x = a$ are straight lines; the graphs of $y = a(x - h)^2 + k$ and $y = Ax^2 + Bx + C$ are parabolas; and the graph of $(x - h)^2 + (y - k)^2 = r^2$ is a circle.

3 Use coordinates to solve geometric problems.

Include proving simple theorems algebraically, using coordinates to compute perimeters and areas for triangles and rectangles, finding midpoints of line segments, finding distances between pairs of points and determining when two lines are parallel or perpendicular.

Probability

Core Concepts · Students understand that:

A Probability models outcomes for situations in which there is inherent randomness, quantifying the degree of uncertainty in terms of relative frequency of occurrence.

B The law of large numbers provides the basis for estimating certain probabilities by use of empirical relative frequencies.

C The laws of probability govern the calculation of probabilities of combined events.

D Interpreting probabilities contextually is essential to rational decision-making in situations involving randomness.

A Coherent Understanding of Probability. Probability assesses the likelihood of an event in a situation that involves randomness. It quantifies the degree of certainty that an event will happen as a number from 0 through 1. This number is generally interpreted as the relative frequency of occurrence of the event over the long run.

The structure of a probability model begins by listing or describing the possible outcomes for a random situation (the sample space) and assigning probabilities based on an assumption about long-run relative frequency. In situations such as flipping a coin, rolling a number cube, or drawing a card, it is reasonable to assume various outcomes are equally likely.

Compound events constructed from these simple ones can be represented by tree diagrams and by frequency or relative frequency tables. The probabilities of compound events can be computed using these representations and by applying the additive and multiplicative laws of probability. Interpreting these probabilities relies on an understanding of independence and conditional probability, approachable through the analysis of two-way tables.

Converting a verbally-stated problem into the symbols and relations of probability requires careful attention to words such as *and*, *or*, *if*, and *all*, and to grammatical constructions that reflect logical connections. This is especially true when applying probability models to real-world problems, where simplifying assumptions are also usually necessary in order to gain at least an approximate solution.

Connections to Statistics and Expressions. Probability is the foundation for drawing valid conclusions from sampling or experimental data. Counting has an advanced connection with Expressions through Pascal's triangle and binomial expansions.

Core Skills · Students can and do:

1 Compute theoretical probabilities by systematically counting points in the sample space.

Make use of symmetry and equally likely outcomes. Include permutation and combination problems as long as small numbers are involved or technology is used, so that formulas are not required.

2 Interpret probabilities of compound events using concepts of independence and conditional probability.

Include reading conditional probabilities from two-way tables.

3 Compute probabilities of compound events.

Make use of the additive and multiplicative laws of probability, tree diagrams and frequency or relative frequency tables in real contexts. Do not emphasize fluency with the related formulas

4 Estimate probabilities empirically.

Include using data from simulations carried out with technology to estimate probabilities.

5 Identify and explain common misconceptions regarding probability.

Include misconceptions about long-run versus short-run behavior of relative frequencies (the law of large numbers). Include attention to the use and misuse of probability in the media, especially in terms of interpreting charts and tables and in the contextual meaning of terms connected to probability, such as 'odds' or 'risk.'

6 Adapt probability models to solve real-world problems.

Include the use of conditional probability to assess subsets of data (e.g., what does the data say about males and females separately). Include the use of independence as a simplifying assumption (e.g., find the probability that two students both contract the disease this year).

Statistics

Core Concepts · Students understand that:

A Statistical methods take variability into account to support making informed decisions based on quantitative studies designed to answer specific questions.

B Visual displays and summary statistics condense the information in data sets into usable knowledge.

C Randomness is the foundation for using statistics to draw conclusions when testing a claim or estimating plausible values for a population characteristic.

D The design of an experiment or sample survey is of critical importance to analyzing the data and drawing conclusions.

A Coherent Understanding of Statistics. Decisions or predictions are often based on data—numbers in context. These decisions or predictions would be easy if the data always sent a clear message, but the message is often obscured by variability in the data. Statistics provides tools for describing variability in data and for making informed decisions that take variability into account.

Data are gathered, displayed, summarized, examined and interpreted to discover patterns. Data can be summarized by a statistic measuring center, such as mean or median, and a statistic measuring spread, such as interquartile range or standard deviation. Different distributions can be compared numerically using these statistics or visually using plots. Which statistics to compare, and what the results of a comparison might mean, depend on the question to be investigated and the real-life actions to be taken.

Randomization has two important uses in drawing statistical conclusions. First, collecting data from a random sample of a population makes it possible to draw valid conclusions about the whole population, taking variability into account. Second, randomly assigning individuals to different treatments allows a fair comparison of the effectiveness of those treatments. A statistically significant outcome is one that is unlikely to be due to chance and this can be evaluated only under the condition of randomness.

In critically reviewing uses of statistics in public media and other reports, it is important to consider the study design, how the data were collected, and the analyses employed as well as the data summaries and the conclusions drawn.

Connections to Probability, Functions and Modeling. Valid conclusions about a population depend on designed simulations or other statistical studies using random sampling or assignment and rely on probability for their interpretation. Functional models may be used to approximate data. If the data are approximately linear, the relationship may be modeled with a trend line and the strength and direction of such a relationship may be expressed through a correlation coefficient. Technology facilitates the study of statistics by making it possible to simulate many possible outcomes in a short amount of time, and by generating plots, function models, trend lines and correlation coefficients.

Core Skills · Students can and do:

1 Formulate questions that can be addressed with data. Identify the relevant data, collect and organize it to respond to the question.

Include determining whether a question can best be addressed through a sample survey, randomized experiment or observational study. Include unbiased selection for a sample and randomization of assignment to treatment for an experiment.

2 Use appropriate displays and summary statistics for data.

Include univariate, bivariate, categorical and quantitative data. Include the thoughtful selection of displays and measures of center and spread to summarize data.

3 Interpret data displays and summaries critically; draw conclusions and develop recommendations.

Include paying attention to the context of the data, interpolating or extrapolating judiciously, and examining the effects of extreme values of the data on summary statistics of center and spread. Include data sets that follow a normal distribution. Include observing and interpreting linear trends in bivariate quantitative data.

4 Draw statistical conclusions involving population means or proportions using sample data.

Conclusions should be based on simulations or other informal techniques, rather than formulas.

5 Evaluate reports based on data.

Include looking for bias or flaws in the way the data were gathered or presented, as well as unwarranted conclusions, such as claims that confuse correlation with causation.

Sample of Works Consulted

I. National Reports and Recommendations

A. *Adding it Up: Helping Children Learn Mathematics*. National Council of Teachers of Mathematics, Mathematics Learning Study Committee, 2001.

B. *Crossroads in Mathematics*, 1995 and *Beyond Crossroads, 2006*. American Mathematical Association of Two-Year Colleges (AMATYC).

C. *Curriculum Focal Points for Prekindergarten through Grade 8 Mathematics: A Quest for Coherence*. National Council of Teachers of Mathematics, 2006.

D. *Foundations for Success: Final Report of the National Mathematics Advisory Panel* (NMAP), 2008.

E. *Guidelines for Assessment and Instruction in Statistics Education (GAISE) project* http://www.amstat.org/education/gaise/.

F. *Habits of Mind: An Organizing Principle for a Mathematics Curriculum*. Cuoco, A. , Goldenberg, E. P., and Mark, J. (1996). Journal of Mathematical Behavior, 15 (4), 375-402. Last retrieved July 15, 2009, from http://www2.edc.org/CME/showcase/HabitsOfMind.pdf.

G. *How People Learn: Brain, Mind, Experience, and School*. Bransford, J.D., A.L. Brown and R.R. Cocking, eds.. Committee on Developments in the Science of Learning, Commission on Behavioral and Social Sciences and Education, National Research Council, 1999.

H. *Mathematics and Democracy, The Case for Quantitative Literacy*, edited by Lynn Arthur Steen. National Council on Education and the Disciplines, 2001.

I. *The Opportunity Equation: Transforming Mathematics and Science Education for Citizenship and the Global Economy*. The Carnegie Corporation of New York and the Institute for Advanced Study, 2009. Online: http://www.opportunityequation.org/

J. *Principles and Standards for School Mathematics*. National Council of Teachers of Mathematics, 2000.

K. *Quantitative Literacy and Mathematical Competencies*. Niss, Mogen. Last retrieved July 15, 2009, from http://www.maa.org/QI/pgs215_220.pdf

L. *A Research Companion to Principles and Standards for School Mathematics*. National Council of Teachers of Mathematics, 2003.

M. *Focus in High School Mathematics: Reasoning and Sense Making*. National Council of Teachers of Mathematics. Reston, VA: NCTM, in press.

N. *What is Mathematics? A Pedagogical Answer to a Philosophical Question*. Harel, G.. In R. B. Gold & R. Simons (Eds.), *Current Issues in the Philosophy of Mathematics from the Perspective of Mathematicians*, Mathematical Association of America, 2008.

O. Blum, W., Galbraith, P. L., Henn, H-W. and Niss, M. (Eds) *Applications and Modeling in Mathematics Education*, ICMI Study 14. Amsterdam: Springer.

II. College Readiness

A. ACT College Readiness Benchmarks™ last retrieved July 14, 2009, from http://www.act.org/research/policymakers/pdf/benchmarks.pdf

B. ACT College Readiness Standards™

C. ACT National Curriculum Survey™

D. Adelman, Cliff. *The Toolbox Revisited: Paths to Degree Completion From High School Through College*, 2006. http://www.ed.gov/rschstat/research/pubs/toolboxrevisit/index.html

E. *Advanced Placement Calculus, Statistics and Computer Science Course Descriptions. May 2009, May 2010*. College Board, 2008.

F. *Aligning Postsecondary Expectations and High School Practice: The Gap Defined* (Policy Implications of the ACT National Curriculum Survey Results 2005-2006). Last retrieved July 14, 2009, from www.act.org/research/policymakers/pdf/NCSPolicyBrief.pdf

G. *Condition of Education, 2004: Indicator 30, Top 30 Postsecondary Courses, U.S. Department of Education*, 2004.

H. *Condition of Education, 2007: High School Course-Taking*. U.S. Department of Education, 2007.

I. Conley, D.T. *Knowledge and Skills for University Success*, 2008.

J. Conley, D.T. *Toward a More Comprehensive Conception of College Readiness*, 2007.

K. *Crisis at the Core: Preparing All Students for College and Work*. ACT, Last retrieved July 14, 2009, from www.act.org/research/policymakers/pdf/crisis_report.pdf

L. Achieve, Inc., Florida Postsecondary Survey, 2008.

M. Golfin, Peggy, et. al. CNA Corporation. *Strengthening Mathematics at the Postsecondary Level: Literature Review and Analysis*, 2005.

N. Camara, W.J., Shaw, E., and Patterson, B. (June 13, 2009). First Year English and Math College Coursework. College Board: New York, NY (Available from authors).

O. CLEP Precalculus Curriculum Survey: Summary of Results. The College Board, 2005.

P. College Board Standards for College Success: Mathematics and Statistics. College Board, 2006. http://www.collegeboard.com/prod_downloads/about/association/academic/mathematics-statistics_cbscs.pdf.

Q. Miller, G.E., Twing, J., and Meyers, J. "Higher Education Readiness Component (HERC) Correlation Study." Austin, TX: Pearson.

R. *On Course for Success: A Close Look at Selected High School Courses That Prepare All Students for College and Work*. ACT. Last retrieved July 14, 2009, from www.act.org/research/policymakers/pdf/success_report.pdf

S. *Out of Many, One: Towards Rigorous Common Core Standards from the Ground Up*. Achieve, 2008.

T. *Ready for College and Ready for Work: Same or Different?* ACT. Last retrieved July 14, 2009, from www.act.org/research/policymakers/pdf/ReadinessBrief.pdf

U. *Ready or Not: Creating a High School Diploma That Counts*. American Diploma Project, 2004. http://www.achieve.org/ReadyorNot

V. Rigor at Risk: Reaffirming Quality in the High School Core Curriculum. ACT, Last retrieved July 14, 2009, from www.act.org/research/policymakers/pdf/rigor_report.pdf

W. *The Forgotten Middle: Ensuring that All Students Are on Target for College and Career Readiness before High School*. ACT, Last retrieved July 14, 2009, from http://www.act.org/research/policymakers/reports/ForgottenMiddle.html

X. Achieve, Inc., Virginia Postsecondary Survey, 2004.

III. Career Readiness

A. ACT Job Skill Comparison Charts

B. Achieve's Mathematics at Work, 2008. http://www.achieve.org/mathatwork

C. *The American Diploma Project Workplace Study*. National Alliance of Business Study, 2002.

D. Carnevale, Anthony and Desrochers, Donna. *Connecting Education Standards and Employment: Course-taking Patterns of Young Workers*, 2002.

http://www.edroundtable.state.in.us/pdf/adp/ADPWorkplaceStudy.pdf

E. Colorado Business Leaders Top Skills, 2006.

F. *Hawai'i Career Ready Study: access to living wage careers from high school*, 2007.

G. *Ready or Not: Creating a High School Diploma That Counts*. American Diploma Project, 2004. http://www.achieve.org/ReadyorNot

H. States' Career Cluster Initiative. *Essential Knowledge and Skill Statements*, 2008.

I. WorkKeys Occupational Profiles™

http://www.act.org/workkeys/profiles/occuprof/index.html

IV. International Documents

STANDARDS [High performing countries/countries of interest]

A. Alberta

Alberta Learning, *Pure Mathematics 10–20–30 (Senior High)*, 2002. (Grades 10-12)

B. Belgium

Department for Educational Development: Core Curriculum. (Grades 9-10 and 11-12) Retrieved June 24, 2009 from http://www.ond.vlaanderen.be/dvo/english/corecurriculum/corecurriculum.htm

C. China

Compulsory mathematics curriculum for senior secondary, as submitted to the APEC consortium. (Grades 10-12) Last retrieved July 13, 2009, from http://www.apecknowledgebank.org/file.aspx?id=1895

D. Chinese Taipei

- Curriculum Guidelines for the Required Subject Math in Senior High Schools, as submitted to the APEC consortium. (Grades 10-11) Last retrieved July 13, 2009 from http://www.apecknowledgebank.org/file.aspx?id=1900
- Curriculum Guidelines for the Elective Subject Math (I) in Senior High Schools, as submitted to the APEC consortium. (Grades 12) Last retrieved July 13, 2009, from http://www.apecknowledgebank.org/file.aspx?id=1901

E. England

Qualifications and Curriculum Authority. *Programme of Study for Key Stage 4, National Curriculum*, 2007. (Grades 10-11)

F. Finland

Finnish National Board of Education. *National Core Curriculum For Upper Secondary Schools 2003*. (Grades 10-12)

G. Hong Kong

Learning Objectives for Key Stage 4. (Grades 10-11)

H. India

- *The National Curriculum Framework*, 2005. (Grades 9-12). National Council of Educational Research and Training. Last retrieved July 13, 2009, from http://ncert.nic.in/html/pdf/schoolcurriculum/framework05/prelims.pdf
- *Secondary School Curriculum, (2010)*. (Grades 9-10). Central Board of Education.
- *Senior School Curriculum, (2010)*. (Grades 11-12). Central Board of Secondary Education.

I. Ireland

- *Junior Certificate Mathematics Syllabus (Higher, Ordinary and Foundation Level)*. (Grades 7-9). National Council for Curriculum and Assessment, 2000.
- The Leaving Certificate *Mathematics Syllabus. (Higher, Ordinary and Foundation Level)*. (Grades 10-12). National Council for Curriculum and Assessment, 2000.

J. Japan

The Courses of Study in Japan, Provisional and Unofficial Translation, 2004, as submitted to the APEC consortium. (Grades 10-12). Last retrieved July 13, 2009, from http://www.apecknowledgebank.org/file.aspx?id=1896.

K. Korea

The Seventh National School Curriculum, as submitted to the APEC consortium. (Grades 7-10). Last retrieved July 13, 2009, from http://www.apecknowledgebank.org/file.aspx?id=1897 and http://www.apecknowledgebank.org/file.aspx?id=1898

L. Singapore

Secondary Mathematics Syllabuses, 2007, as submitted to the APEC consortium. (Grades ≈7-10/11). Last retrieved July 13, 2009, from http://www.moe.gov.sg/education/syllabuses/sciences/files/maths-secondary.pdf.

ASSESSMENTS [Key international assessments with global reach]

A. Program for International Student Assessment (PISA), 2006.

B. Trends in International Mathematics and Science Study (TIMSS), 2007.

C. International Baccalaureate, Mathematics Standard Level, 2006.

D. University of Cambridge International Examinations: General Certificate of Secondary Education in Mathematics, 2009.

E. EdExcel, General Certificate of Secondary Education, Mathematics, 2009.

F. Lundsgaard Hansen, Birthe and Vagn. Reference levels in School Mathematics, Education in Europe, National Presentation, Denmark, 2001. Last retrieved July 15, 2009, from http://www.emis.de/projects/Ref/doc_ems_pdf/EMS_NATIONAL_PRESENTATIONS/EMS_DENMARK.pdf

V. State Documents

A. California State Standards

B. Florida State Standards

C. Georgia State Standards

D. Massachusetts State Standards

E. Mathematics Curriculum Framework Revision Panel [Revised Progress Report]. Massachusetts Department of Elementary and Secondary Education, 2009. Last retrieved July 15, 2009, from http://www.doe.mass.edu/boe/docs/0509/item5_report.pdf.

F. Minnesota State Standards

Quantity

Core Concepts

A The value of a quantity is not specified unless the units are named or understood from the context.

B Quantities can be added and subtracted only when they are of the same type (length, area, speed, etc.).

C Quantities can be multiplied or divided to create new types of quantities, called derived quantities.

Core Skills

1. Know when and how to convert units in computations.
2. Use and interpret quantities and units correctly in algebraic formulas.
3. Use and interpret quantities and units correctly in graphs and data displays.
4. Use units as a way to understand problems and to guide the solution of multistep problems.

Example Tasks

1. **Core Concept A.**

The following question was posted on an Internet gardening forum:

> I am trying to figure out how many yards of soil I need for my gardens but have no idea how much a yard of soil actually is. The nursery says they deliver 6 yards in a dump truck. I realize that a yard is 3 feet. But what is a yard of soil—is that 3 feet long and 3 feet high? I'm clueless! LOL

Write a helpful response to the person who posted this question.

2. **Core Concept B, Core Skill 2.**

A textbook printed the following formula for the surface area of a cylinder:

$$SA = 2\pi r + 2\pi rh\,.$$

Kim had never studied geometry, but she knew there must be a typographical error in this formula. How could she tell?

3. **Core Concept B, Core Skill 4.**

As a flooring contractor, Lupe sets floor tile for a living. She submits a bid for each new job. When preparing a bid, she measures the area of the floor to be tiled and then figures out how much material she will need. She charges the following prices for materials and labor:

- Subflooring: \$1.27 per square foot
- Tile: \$6.59 per square foot
- Adhesive: \$31.95 per job
- Grout: \$55.95 per job
- Labor: \$125 base price plus \$0.79 per square foot

For a job tiling an area of 550 square feet, what is the amount of the bid, based on the materials listed above?

4. **Core Concept C.**

If there are 8×10^{12} hydrogen molecules in a volume of 4×10^4 cubic centimeters, what is the average number of hydrogen molecules per cubic centimeter?

5. **Core Concept C.**

The Trans Alaska Pipeline System is 800 miles long and cost \$8 billion to build. Divide one of these numbers by the other. What is the meaning of the answer?

6. **Core Skill 1.**

Signs in Canada give the speed limit in kilometers per hour. If the speed limit is 100 km/hr, and you're driving at a speed of 65 mph, are you over or under the speed limit? By how much?

7. **Core Skill 1.**

Greenland has a population of 56,700 and a land area of 2,175,600 square kilometers. By what factor is the population density of the United States, 80 persons per square mile, larger than the population density of Greenland?

8. **Core Skill 1; Core Skill 4; Number Core Skill 2; Number Core Skill 3; Number Core Skill 5.**

A doctor orders Ceclor elixir for a child who weighs 9.3 kg. The child must receive 25 mg of

the drug for each kilogram of body weight. The hospital pharmacy stocks Ceclor elixir in a concentration of 250 mg per 5 ml.

How many milliliters of the stock elixir should the child receive?

(a) Estimate the answer mentally. (Suggestion: approximate the child's weight as 10 kg.)

(b) Compute the answer to the nearest tenth of a milliliter.

9. **Core Skill 2, Core Skill 4.**

The distance traveled by a freely falling object dropped from rest is given by the formula $s = \frac{1}{2}gt^2$. Here s is the distance fallen, g is a constant representing the earth's surface gravity, and t is the duration of time over which the object falls. If s has units of meters and t has units of seconds, what must be the units of g? If we interpret g as a rate of change, what sort of quantity is changing with time? What does this mean about the speed of a freely falling object?

10. **Core Skill 2; Equations Core Skill 3.**

The *ideal gas law* is a mathematical relationship that describes the pressure, volume, and temperature of an ideal gas in thermal equilibrium:

$$pV = nRT.$$

In the ideal gas law, p stands for pressure, V stands for volume, n is the number of moles of gas, R is a constant equal to $0.0821\ \frac{\text{L}\cdot\text{atm}}{\text{mol}\cdot\text{K}}$, and T stands for temperature measured in the Kelvin temperature scale.

(a) Find the temperature of 0.520 mol of argon gas occupying a volume of 4.25 L at a pressure of 0.987 atm.

(b) If the volume stays the same as in (a), but the pressure drops by half, then what must have happened to the temperature?

11. **Core Skill 4.**

According to *Runner's World* magazine,

> On average the human body is more than 50 percent water. Runners and other endurance athletes average around 60 percent. This equals about 120 soda cans' worth of water in a 160-pound runner!

Check out the *Runner's World* calculation. Are there really about 120 soda cans' worth of water in the body of a 160-pound runner? Here are some facts:

- A typical soda can holds 12 fluid ounces.
- 16 ounces (one pint) of water weighs one pound.

12. **Core Skill 4.**

A liquid weed-killer comes in four different kinds of bottles. The accompanying table gives information about the concentration, size, and price of the bottles. The "concentration" refers to the percent of "active ingredient" in the bottle. The rest of the liquid in the bottle is water. For example, bottle B contains $(0.18)(32) = 5.76$ fl. oz. of active ingredient and $32 - 5.76 = 26.24$ fl. oz. water.

Table 1 *Weed killer comes in four different kinds of bottles.*

	Concentration	Amount in Bottle	Price of Bottle
A	0.96%	64 fl. oz.	\$12.99
B	18.0%	32 fl. oz.	\$29.99
C	41.0%	32 fl. oz.	\$39.99
D	0.96%	24 fl. oz.	\$5.99

(a) Rank the four bottles in order of how good a buy each represents. State what criterion you are using.

(b) Suppose a job calls for a total of 12 fl. oz. of active ingredient. How much would you need to spend if you bought Type A bottles? Type B bottles? Type C bottles? Type D bottles?

13. **Core Skill 4.**

A table in a construction manual lists the "k-values" of different building materials. The k-value measures how easily heat flows through a material. The k-value of concrete is given as

$$0.002\ \frac{\text{BTU}\cdot\text{in}}{\text{hr}\cdot\text{ft}^2\cdot{}^\circ\text{F}}$$

A BTU is a unit of heat energy.

The construction manual gives the following example problem illustrating the k-value:

> How many BTUs of heat energy would be lost through a 100 ft^2 concrete wall 6 inches thick over a 12 hour period, if the temperature difference from one side of the wall to the other is 70°F?

Your friend Anders doesn't know much about construction—or about heat loss—yet he was able to get the answer, 28 BTUs, just by thinking about units. How did he get the answer?

14. **Core Skill 3**.

Each graph in the accompanying figure shows the relationship between distance traveled and time for a different train (Train A, Train B, and Train C).

Which train was traveling fastest during the interval of time shown? Justify your answer.

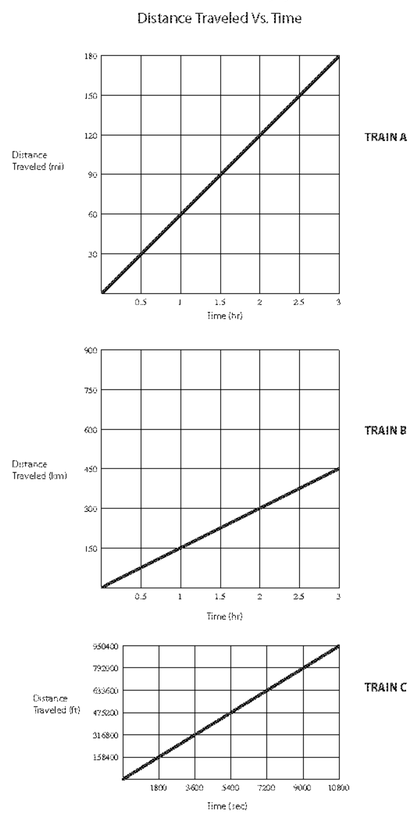


Figure 1

Sources

1. Zimba, Jason
2. Zimba, Jason
3. Charles A. Dana Center. (2009). *Algebra I Assessments* (2nd ed.). Austin: Author.
4. ACT, Inc.
5. Zimba, Jason
6. Zimba, Jason
7. Zimba, Jason
8. Adapted from *Ready or Not: Creating a High School Diploma That Counts*. Achieve copyright 2004.
9. Zimba, Jason
10. Adapted from *Ready or Not: Creating a High School Diploma That Counts*. Achieve copyright 2004.
11. communicated by Phil Daro
12. communicated by Phil Daro
13. Zimba, Jason
14. Zimba, Jason

Expressions

Core Concepts

A Expressions are constructions built up from numbers, variables, and operations, which have a numerical value when each variable is replaced with a number.

B Complex expressions are made up of simpler expressions.

C The rules of arithmetic can be applied to transform an expression without changing its value.

D Rewriting expressions in equivalent forms serves a purpose in solving problems.

Core Skills

1. See structure in expressions.
2. Manipulate simple expressions.
3. Define variables and write an expression to represent a quantity in a problem.
4. Interpret an expression that represents a quantity in terms of the context.

Example Tasks

1. **Core Concept A.**
   It is given that p = 4×10^5 and $q = 8 \times 10^6$. Expressing your answers in standard form, find
   (a) $\frac{p}{q}$.
   (b) $\sqrt[3]{q}$.

2. **Core Concept A.**
   Replace x by 16 in each of the following expressions and then simplify to an exact expression without using a calculator.
   (a) $3x - 48$
   (b) $3(x - 48)$
   (c) $\sqrt{x+9}$
   (d) $\sqrt{x} + \sqrt{9}$
   (e) $|x - 20| + (x - 20)$

3. **Core Concept A.**
   Simplify:
   (a) $3(x-2) + x[4 - 3(x-7)]$
   (b) $\frac{(a^3)^5}{(a^7)^2}$
   Partially check your answers by making appropriate calculations using $x = -5$, $x = 3$, $a = 2$, $a = -2$.

4. **Core Concept A.**
   It is given that $x = a + \sqrt{a^2 + b^2}$.
   (a) Calculate x when $a = 0.73$ and $b = 1.84$. Give your answer correct to 2 decimal places.
   (b) Express b in terms of x and a.

5. **Core Concept A, Core Skill 3.**
   Write an expression representing each of the following sequences of operations on a number x.
   - Multiply x by 5 then add 1.
   - Add 8 to x then multiply your answer by 5
   - Add 3 to x then divide your answer by 4
   - Multiply x by x then multiply your answer by 7
   - Multiply x by 3 then square your answer

6. **Core Concept A, Core Concept B, Core Skill 2, Core Skill 3, Core Skill 4.**
   As a flooring contractor, Lupe sets floor tile for a living. She submits a bid for each new job. When preparing a bid, she measures the area of the floor to be tiled and then figures out how much material she will need. She charges the following

prices for materials and labor:
Subflooring: \$1.27 per square foot

Tile: \$6.59 per square foot
Adhesive: \$31.95 per job
Grout: \$55.95 per job
Labor: \$125 base price plus \$0.79 per square foot.

Write an expression to determine the total cost of the materials and labor for a typical job in terms of the number of square feet. Explain what the numbers and symbols in the expression mean.

7. **Core Concept B.**
   Describe the parts of each expression.
   (a) $\left(\frac{l_1 + l_2}{2}\right) w$ (b) $(a-b)^2 - (a+b)^2$
   (c) $\frac{1}{\frac{1}{R_1} + \frac{1}{R_2}}$.
   COMMENTS ON SOLUTION:
   For example, the expression in (a) is a product of two factors, the first of which is a quotient where the numerator is a sum.

8. **Core Concept C; Core Concept D; Core Skill 3; Core Skill 4.**
   Ask the apprentice to mix a solution (#1) of 5 g Peters fertilizer and 50 g of distilled water.
   - Determine the percent concentration-by-weight of this solution.
     The basic formula is *Weight of the solute divided by the combined weight of the solute and solvent equals percent concentration-by-weight.*
     Example: $5g \div (5g + 50g) = 5g \div 55g \approx 0.09$ or 9% concentration-by-weight.
   - Calculate the density of this solution (#1).
     Divide the weight by the volume to determine the density in gm/ml.

   Ask the apprentice to make a solution (#2) using 10 g of Peters and 50 g of distilled water.
   - Determine the percent concentration-by-weight.
   - Ask the apprentice: Why is the concentration-by-weight of solution #2 not double the concentration-by-weight of solution #1 since the solute is doubled?
     $$C = \frac{x}{x+V} \quad \text{and} \quad \frac{2x}{2x+V} \neq 2\frac{x}{x+V}.$$
   - Ask the apprentice to use the formula to explain.

9. **Core Concept C.**
   Simplify each expression without evaluating each term. (Use the rules of arithmetic.)
   (a) $12 \times 17 - 3 \times 24 - 6 \times 22$
   (b) $(4 \times 17 + 3 \times 12) - 2 \times (12 + 17)$
   (c) $(4a + 3b) - 2(b + a) + 1 - b$
   (d) $(20 + 1) \times (20 - 1)$
   (e) $(a + 1)(a - 1)$

10. **Core Concept C; Core Concept D; Core Skill 1; Core Skill 4.**
    Which calculations show the correct number of small squares in Figure 1? Draw diagrams to explain the meaning of the other expressions.
    (a) $4+6\times4$ (b) $4\times4+6$ (c) $4\times(4+6)$
    (d) 4^2+6 (e) $4\times2+6$ (f) $4^2+4\times6$
    (g) $4\times2+4\times6$

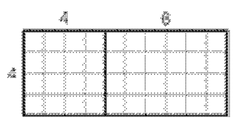


Figure 1

11. **Core Concept D.**
    Evaluate
    (a) $a + 2b + 3(a + b) + 2a$ when $a = -\frac{13}{3}, b = \frac{7}{5}$
    (b) $7c - 2d + 3 - 5c - d - 2c$ when $c = \frac{9}{2}, d = -1$
    (c) $3x + y + 3 - 3(x + y)$ when $x = 1, y = -1$

COMMENTS ON SOLUTION:

Note that it can advantageous to expand and rearrange terms before evaluating.

12. **Core Concept D; Core Skill 1.**

Use Figure 2 to explain why the following expressions are equivalent:

$$(n+2)^2 - 4 \quad \text{and} \quad n^2 + 4n$$

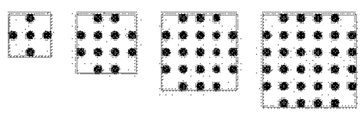


Figure 2

13. **Core Concept D; Core Skill 1.**

Write a possible identity for Line n, and show how it fits the pattern for each line in the list given.

(a)
- Line 1: $1 \times 3 = 2 + 1$
- Line 2: $2 \times 4 = 4 + 4$
- Line 3: $3 \times 5 = 6 + 9$
- Line 4 $4 \times 6 = 8 + 16$
- Line 5: $5 \times 7 = 10 + 25$

(b)
- Line 1: $1 - 1 = 2 \times 0$
- Line 2: $4 - 1 = 3 \times 1$
- Line 3: $9 - 1 = 4 \times 2$
- Line 4: $16 - 1 = 5 \times 3$
- Line 5: $25 - 1 = 6 \times 4$

14. **Core Concept D; Core Skill 1.**

The height of a thrown horseshoe depends upon the time that has elapsed since its release. Its height (measured in feet) as a function of time (measured in seconds) from the instant of release is

$$1\frac{3}{16} + 18t - 16t^2.$$

The expressions (a)–(d) below are equivalent. Which is most useful for finding the maximum height of the horseshoe's path, and why is it the most useful expression?

(a) $1\frac{3}{16} + 18t - 16t^2$

(b) $-16\left(t - \frac{19}{16}\right)\left(t + \frac{1}{16}\right)$

(c) $\frac{1}{16}(19 - 16t)(16t + 1)$

(d) $-16\left(t - \frac{9}{16}\right)^2 + \frac{100}{16}$.

15. **Core Skill 1.**

Which of the following is a factor of the polynomial below?

$$4x^3y - 8x^2y^2 + 10xy^3$$

(a) $4y^2$ (b) $2x^2$
(c) $2xy$ (d) x^2y^2

16. **Core Skill 1.**

Factorise completely: $6cx - 3cy - 2dx + dy$.

17. **Core Skill 1.**

A physics professor says: "Of course, it is easy to see that $L_0\sqrt{1 - \frac{v^2}{c^2}} = 0$ when $v = c$." Give a possible explanation in terms of the structure of this expression why the professor might say that.

18. **Core Skill 1.**

Give an explanation in terms of the structure of the expression

$$\frac{s}{\sqrt{n}}$$

why it halves in value when n is quadrupled.

19. **Core Skill 1.**

Which of (i)–(iv) would be the most productive first step in factoring expressions (a)–(f)?

(i) Finding a common factor
(ii) Expressing as a difference of two squares
(ii) Expressing as a perfect square
(iv) None of the above.

(a) $4x^2 + 5x$ (b) $36x^2 - 25y^2$
(c) $x^4 - y^4$ (d) $x^2 + 6xy + 9y^2$
(e) $x^2 + 5x + 4$ (f) $0.5x^2 - 2.5x - 7$

20. **Core Skill 1.**

When $(3u^2 + au + 5)(u^{10} + 2u^4 - bu^2)$ is written as a polynomial in u,

(a) what is the highest degree?
(b) for which powers of u are the terms nonzero?

COMMENTS ON SOLUTION:

Terms occur in degrees 2, 3, 4, 5, 6, 10, 11, 12 and the total (largest) degree is 12. This problem reinforces the structure-exploiting scanning procedure for finding products of sums with almost no arithmetic. Qualitative information of this sort is used to focus or avoid quantitative work.

21. **Core Skill 1.**

Find the y^3 term in

$$(3y^3 - y^2 + 5ay)(y^2 + 2y - a)$$

when it is written as a polynomial in y.

COMMENTS ON SOLUTION:

This term comes from products of a summand from the first factor and a summand from the second that give total y exponent 3. The y^3 is fixed and can be factored out ahead of time. Scanning and picking out the terms of interest gives

$$y^3\left[(3)(-a) + (-1)(2) + (5a)(1)\right]$$

- The expression just above has not been simplified, illustrating the idea that organizational and arithmetic tasks should be separated.
- Computing the whole polynomial and discarding unneeded terms requires far more work. The problem formulation therefore provides an incentive to understand the qualitative structure of products of sums.

22. **Core Skill 1.**

If $a \neq b$ and $\frac{1}{x} + \frac{1}{a} = \frac{1}{b}$, then $x =$

(a) $\frac{1}{b} - \frac{1}{a}$ (b) $b - a$
(c) $\frac{1}{ab}$ (d) $\frac{a-b}{ab}$
(e) $\frac{ab}{a-b}$

COMMENTS ON SOLUTION:

Although the problem can be solved by routine manipulation, it is quicker to solve for a student who sees structural reasons for eliminating some or all of the wrong choices.

23. **Core Skill 2.**

Factorise completely

(a) $15a^2 + 12a^3$,
(b) $1 - 16b^2$.

24. **Core Skill 2.**

Perform manipulations such as the following with procedural fluency:

$$(a+b)^2 = a^2 + 2ab + b^2$$
$$(a-b)^2 = a^2 - 2ab + b^2$$
$$(a+b)(a-b) = a^2 - b^2$$
$$(x+a)(x+b) = x^2 + (a+b)x + ab$$

25. **Core Skill 2.**

Simplify

$$\frac{a^{-2}b^2c}{a^2b^{-3}c^2}$$

26. **Core Skill 2.**

Simplify $\sqrt{x^9t^6}$ for $x > 0, t > 0$.

27. **Core Skill 3.**

A shopkeeper sells pens and pencils. Each pen costs \$5 and each pencil costs \$3. One day he sold x pens. On the same day he sold 9 more pens than pencils.

(a) Write down an expression, in terms of x, for his total income from the sale of these pens and pencils.
(b) This total income was less than \$300. Form an inequality in x and solve it.
(c) Hence write down the maximum number of pens that he sold.

28. **Core Skill 3.**

Suppose x adults and y children visit a theme park one day. The price of an adult ticket is a dollars and the price of a child's ticket is b dollars. Write an algebraic expression for:

(a) The total number of adults and children who visit the park that day.

(b) The cost in dollars of 2 adult tickets and 3 child tickets.

29. **Core Skill 3.**

Sam makes and sells mirrors. She makes a frame for each mirror with small square ceramic tiles. Find an expression for the number of tiles needed to border a size n frame.

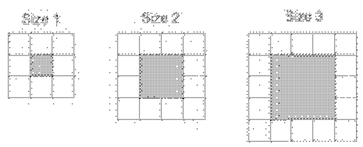


Figure 3

30. **Core Skill 3.**

A soccer tournament is being arranged. A number of teams have entered. Every team will play every other team twice: once at home and once away. Find an expression for the number of matches that will need to be played if N teams enter the tournament. Explain how you can be sure that your expression will work for all values of N.

COMMENTS ON SOLUTION:

There are N locations where games are played, one for each team. Furthermore, the number of games played at each location is $N-1$, because each team plays a home game with every other team. Thus the total number of games is $N(N-1)$.

31. **Core Skill 3; Core Skill 4.**

Consider the following statement about a positive integer n: The sum of any n consecutive integers is divisible by n.

For which values of n is the statement true? For which is it false? Prove that your answers are correct.

32. **Core Skill 3, Core Skill 4, Mathematical Practise 2.**

Prove that the sum of two odd integers is an even integer.

COMMENTS ON SOLUTION:

Let n and m be two odd integers. Since n is odd, it is one more than an even integer, so $n = 2k+1$ for some integer k. By the same reasoning, $m = 2l+1$ for some integer l. Therefore, the sum of n and m is

$$\begin{aligned} n+m &= (2k+1)+(2l+1) \\ &= 2k+2l+2 = 2(k+l+1). \end{aligned}$$

So $n+m$ is 2 times the integer $k+l+1$, and therefore it is even.

33. **Core Skill 4.**

Suppose x adults and y children visit a theme park one day. The price of an adult ticket is a dollars and the price of a child's ticket is b dollars. Interpret the following in everyday language:

(a) $a = 3b$

(b) $ax + by < 1000$

34. **Core Skill 4.**

In (a)–(d), give all values of a and n satisfying the condition, where a is real and n is a positive integer.

(a) $-a$ is positive

(b) $\sqrt{5-a}$ is defined

(c) $\dfrac{1}{a}$ is an integer

(d) a^n is negative

Sources

1. University of Cambridge International Examinations
2. Fristedt, Bert
3. Fristedt, Bert
4. University of Cambridge International Examinations
5. Reproduced with the permission of America's Choice

6. Charles A. Dana Center. (2009).*Algebra I Assessments* (2nd ed.). Austin: Author.
7. McCallum, William
8. *Ready or Not: Creating a High School Diploma That Counts*. Achieve copyright 2004.
9. Tony Gardiner
10. Reproduced with the permission of America's Choice
11. Tony Gardiner
12. Reproduced with the permission of America's Choice
13. Reproduced with the permission of America's Choice
14. Adapted from Focus in High School Mathematics: Reasoning and Sense Making, copyright 2009 by the National Council of Teachers of Mathematics. All rights reserved.
15. Massachusetts Department of Elementary and Secondary Education
16. University of Cambridge International Examinations
17. McCallum, William
18. McCallum, William
19. Adapted from Washington Office of the Superintendent of Public Instruction
20. Developed by Frank Quinn for the Working Group on Preparation for Technical Careers project of the American Mathematical Society.
21. Developed by Frank Quinn for the Working Group on Preparation for Technical Careers project of the American Mathematical Society.
22. College Board
23. University of Cambridge International Examinations
24. Japanese Research Team for U.S.-Japan Comparative Research on Science Mathematics and Technology Education, The Courses of Study in Japan, Oct. 2004 (Provisional and Unofficial Translation).
25. Washington Office of the Superintendent of Public Instruction
26. Zimba, Jason
27. University of Cambridge International Examinations
28. Shell Centre for Mathematical Education/Mathematics Assessment Resource Service (MARS)
29. Shell Centre for Mathematical Education/Mathematics Assessment Resource Service (MARS)
30. Shell Centre for Mathematical Education/Mathematics Assessment Resource Service (MARS)
31. Shell Centre for Mathematical Education/Mathematics Assessment Resource Service (MARS)
32. Washington Office of the Superintendent of Public Instruction
33. Shell Centre for Mathematical Education/Mathematics Assessment Resource Service (MARS)
34. Washington Office of the Superintendent of Public Instruction

Equations

Core Concepts

A An equation is a statement that two expressions are equal.

B The solutions of an equation are the values of the variables that make the resulting numerical statement true.

C The steps in solving an equation are guided by understanding and justified by logical reasoning.

D Equations not solvable in one number system may have solutions in a larger number system.

Core Skills

1. Understand a problem and formulate an equation to solve it.
2. Solve equations in one variable using manipulations guided by the rules of arithmetic and the properties of equality.
3. Rearrange formulas to isolate a quantity of interest.
4. Solve systems of equations.
5. Solve linear inequalities in one variable and graph the solution set on a number line.
6. Graph the solution set of a linear inequality in two variables on the coordinate plane.

Example Tasks

1. **Core Concept A.**
   Are the following equations?
   (a) $y = x^2 + 3x + 2$
   (b) $x^2 + 3x + 2 = 0$
   (c) $x^2 + 3x + 2 = (x+1)(x+2)$
   (d) $\left(x + \frac{3}{2}\right)^2 - \frac{1}{4}$
   (e) $x = -2$

2. **Core Concept B.**
   What are the solutions of the equation below?

$$2n(3n - 12) = 0$$

   (a) 0 and 4 (b) 0 and 12
   (c) 2 and 4 (d) 2 and 12

3. **Core Concept B, Core Skill 6.**
   The shaded region inside the triangle ABC is defined by three inequalities. One of these is $x + y < 5\frac{1}{2}$.

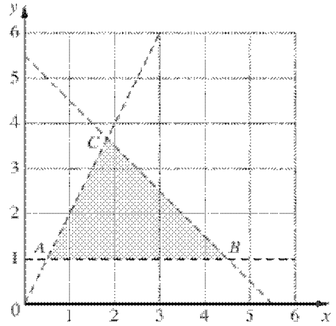


Figure 1

   (a) Write down the other inequalities.
   (b) How many points, with integer coordinates, lie in the shaded region?

4. **Core Concept B.**
   In (a)–(c), does the equation have a solution? Give a reason for your answer that does not depend on solving the equation.

   (a) $\frac{t+2}{3+t} = 1$ (b) $\frac{3+t}{3-t} = 1$
   (c) $\frac{t-2}{2-t} = 1$

5. **Core Concept C.**
   A student performs the following steps in solving an equation:

$$\frac{x+3}{2x+6} = 1$$
$$x + 3 = 2x + 6$$
$$x = -3$$

   Is the solution correct? If yes, explain why. If no, explain what was wrong with the student's reasoning.

6. **Core Concept C.**
   If the equations

$$3x + 2y + 2z = 19$$
$$3x + y + z = 14$$

   are true, which of the following is the value of $y + z$?
   (a) -5 (b) -4 (c) 0
   (d) 4 (e) 5

7. **Core Concept D.**
   Write an equation or inequality that has
   (a) no real solutions;
   (b) infinite numbers of real solutions; and
   (c) exactly one real solution.

8. **Core Concept D.**
   In (a)–(f), how many solutions are there? Are they rational, real, or complex? Give a reason for your answer that does not depend on solving the equation.
   (a) $(x+3)^2 = 9$
   (b) $(x-3)^2 = 9$
   (c) $-(x-3)^2 = 9$
   (d) $16 - (x-3)^2 = 9$
   (e) $9(x+3)^2 = 0$
   (f) $(x+3)^2 = (x+4)^2$

9. **Core Skill 1.**
   One firm offers an investment plan that pays a flat rate of 10% interest each year on the original sum invested. So each dollar grows after n years to

$$(1 + \frac{10n}{100}) \text{ dollars.}$$

   Another firm offers a plan that pays 5% interest each year on the previous year's balance. So each dollar grows after n years to

$$(1 + \frac{5}{100})^n \text{ dollars.}$$

   Find, using a graphing calculator or a spreadsheet, when the two offers give roughly equal returns. Which is better in the long term?

10. **Equations: Core Skill 1, Core Skill 2; Functions: Core Skill 4.**
    Quinn works in Chicago and in New York City. He travels by taxi in each of the two cities.
    In Chicago, he pays a fixed taxi fare of \$1.90 per ride, plus \$1.60 per mile traveled.
    (a) Write an equation that expresses f, Quinn's total fare for a taxi ride in Chicago, as a function of m, the number of miles traveled.

    In New York City, Quinn pays a fixed taxi fare of \$1.50 per ride, plus 25 cents per $\frac{1}{10}$ mile traveled.
    (b) Write an equation that expresses f, Quinn's total fare for a taxi ride in New York City, as a function of m, the number of miles traveled.
    (c) On a recent trip Quinn noticed that the total number of miles traveled by taxi from the airport to the hotel was the same in each of the two cities. Before tips were added, his taxi fare to the hotel in New York City was \$12.20 more than his taxi fare to the hotel in Chicago. What was the distance from the airport to the hotel in each city? Show or explain how you got your answer.

11. **Core Skill 1, Core Skill 4.**

'Give me 8 sheep and then we will have an equal number' said one shepherd to another. 'No, you give me 8 sheep and then I will have twice as many as you' replied another shepherd. How many sheep did each shepherd have to start with?

12. **Core Skill 1, Core Skill 4.**

(*The Abbot of Canterbury's Puzzle: AD 735–804*)

One hundred bushels of corn were distributed among one hundred people in such a way that each man received three bushels, each woman received two bushels, and each child received half a bushel. Given that there were five times as many women as men, how many children were there?

13. **Core Skill 2.**

Solve the equations

(a) $\frac{24}{x-4} = 1$,
(b) $12 - 2(5 - y) = 5y$.

14. **Core Skill 2.**

Solve the following quadratic equations using factoring methods:

(a) $2x^2+x-3 = 0$ (b) $4x^2 + 6x = 0$
(c) $36x^2 - 25 = 0$ (d) $x^2+6x+9 = 0$

15. **Core Skill 2.**

Use the quadratic formula to solve $4x^2 - 2x = 5$.

16. **Core Skill 3.**

The distance d travelled after time t at a steady speed v is given by

$$d = vt.$$

(a) How long would it take to travel 150 miles at 60 miles per hour?
(b) How fast would you have to go to do it in one and a half hours?

17. **Core Skill 3.**

Solve $A = p + prt$ for p.

18. **Core Skill 3.**

The distance D that it takes a car moving at speed v to stop is given by

$$D = rv + \frac{v^2}{2a}$$

where r is the reaction time it takes the driver to hit the brakes and a is the breaking deceleration.

(a) If r is 2 seconds and $a = 5$ meters/sec^2, how far would the car travel when stopping from 50 meters/sec?
(b) Solve the given equation to find an expression for v in terms of D, r and a. If you want to stop within 100 meters, how fast can you safely go?

COMMENTS ON SOLUTION:

Part (b) goes beyond the scope of Core Skill 3, and illustrates the extension of this task into later course work.

19. **Core Skill 4.**

Solve the simultaneous equations

$$\begin{cases} 2x - y = 16 \\ 3x + 2y = 17. \end{cases}$$

20. **Core Skill 4.**

The only coins that Alexis has are dimes and quarters.

- Her coins have a total value of \$5.80.
- She has a total of 40 coins.

Which of the following systems of equations can be used to find the number of dimes, d, and the number of quarters, q, that Alexis has?

(a)

$$d + q = 5.80$$
$$40d + 40q = 5.80$$

(b)

$$d + q = 40$$
$$5.80d + 5.80q = 40$$

(c)

$$d + q = 5.80$$
$$0.10d + 0.25q = 40$$

(d)

$$d + q = 40$$
$$0.10d + 0.25q = 5.80$$

21. **Core Skill 4.**

Solve the following system of equations:

$$\begin{cases} 2x - y - z = 7 \\ 3x + 5y + z = -10 \\ 4x - 3y + 2z = 4. \end{cases}$$

22. **Core Skill 5.**

Solve $|x - 6| \leq 4$ and locate the solution on the number line.

23. **Core Skill 5.**

Solve $8.5 < 3x + 2 \leq 9.7$ and locate the solution on the number line.

24. **Core Skill 1, Core Skill 5.**

Mr. Smith uses the following formula to calculate students' final score C in his Algebra II class: $C = 0.4E + 0.6T$, where E represents the score on the final exam, and T represents the average score of all tests given during the grading period. All tests and the final exam are worth a maximum of 100 points. The minimum passing score on tests, the final exam, and the course is 60. Determine the inequalities that describe the following situation. When necessary, round scores to the nearest tenth.

(a) Is it possible for a student to have a failing test score average (i.e., $T < 60$ points) and still pass the course?
(b) If you answered "yes," what is the minimum test score average a student can have and still pass the course? What final exam score is needed to pass the course with a minimum test score average?
(c) A student has a particular test score average. How can (s)he figure out the minimum final exam score needed to pass the course?

25. **Core Skill 3.**

If oil should ever be spilled into the Columbia River Estuary, the company responsible for the spill would be liable for monetary damages according to a formula. By Washington state law, the formula in 2009 was given by:[1]

$$D = 0.508GS(A + B + C)$$

In this formula, D is the damage liability in dollars; G is the number of gallons spilled; S is a "vulnerability score" in the range from 1 to 5 that takes into account the wildlife characteristics of any given square kilometer of the estuary[2]; and A, B and C are "chemical penalty scores" in the range from 1 to 5 that take into account the toxicity, harmful mechanical properties, and longevity of the material spilled. For example, kerosene has a toxicity score $A = 1.4$, a harmful mechanical property score $B = 2.4$, and a longevity score $C = 1$.[3] Suppose that a company responsible for a kerosene spill in an area of lowest vulnerability is held liable for \$10 million. How many gallons were spilled? How many dollars per gallon was the company charged for the spill? In general, what is a formula for the number of dollars of liability per gallon of spill? What is the maximum possible liability in dollars per gallon?

Sources

1. McCallum, William
2. Massachusetts Department of Elementary and Secondary Education
3. University of Cambridge International Examinations

[1] http://apps.leg.wa.gov/WAC/default.aspx?cite=173-183-840
[2] see http://apps.leg.wa.gov/wac/default.aspx?cite=173-183-500
[3] http://apps.leg.wa.gov/WAC/default.aspx?dispo=true&cite=173-183&full=true.

4. McCallum, William
5. McCallum, William
6. College Board
7. Washington Office of the Superintendent of Public Instruction
8. McCallum, William
9. Shell Centre for Mathematical Education/Mathematics Assessment Resource Service (MARS)
10. Massachusetts Department of Elementary and Secondary Education
11. Gardiner, Tony
12. Gardiner, Tony
13. University of Cambridge International Examinations
14. Washington Office of the Superintendent of Public Instruction
15. Washington Office of the Superintendent of Public Instruction
16. Shell Centre for Mathematical Education/Mathematics Assessment Resource Service (MARS)
17. Washington Office of the Superintendent of Public Instruction
18. Shell Centre for Mathematical Education/Mathematics Assessment Resource Service (MARS)
19. University of Cambridge International Examinations
20. Massachusetts Department of Elementary and Secondary Education
21. Washington Office of the Superintendent of Public Instruction
22. Washington Office of the Superintendent of Public Instruction
23. Washington Office of the Superintendent of Public Instruction
24. Washington Office of the Superintendent of Public Instruction
25. Zimba, Jason

Modeling

Core Concepts

A Mathematical models involve choices and assumptions that abstract key features from situations to help us solve problems.

B Even very simple models can be useful.

Core Skills

1. Model numerical situations.
2. Model physical objects with geometric shapes.
3. Model situations with equations and inequalities.
4. Model situations with common functions.
5. Model situations using probability and statistics.
6. Interpret the results of applying a model and compare models for a particular situation.

The Modeling standard needs discussion in relation to the other standards. For example, what is the difference between a *geometry task* versus *a modeling task that uses geometry*? What is the difference between a contextualized algebra problem and a modeling problem that uses equations to describe a situation?

In these standards, a task is considered to belong more in Modeling, the more it is the case that:

- The math techniques to be used are not stated explicitly in the problem.
  - However, beginning/developmental modeling tasks can walk the student through the techniques, as a way to show their use.
- Various assumptions must be imposed by the student to apply the techniques; these assumptions are not explicitly stated in the problem; and differing sets of assumptions could all be considered reasonable.
- The task involves making a decision about something.
- The task involves an optimization of some kind.
- The context is not a pretext. While the task inevitably teaches mathematics, its primary focus is the situation or phenomenon at hand. See the figure below (after a diagram by Malcom Swann, in Muller and Burkhardt, 2006).

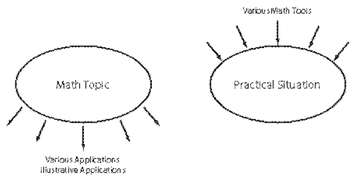


Figure 1

- The phenomenon or situation is interesting or worthwhile beyond the academic discourse of the classroom.

A list of criteria such as this one does not define a hard-and-fast rule that could be used to unambiguously classify tasks. The distinction between *geometry* and *modeling with geometry* is a heuristic one. Moreover, few, if any, of the following Modeling tasks satisfy all of the listed criteria. But each task fulfills one or more of these criteria to a great enough extent to be considered an example of Modeling.

Reference

E. Muller and H. Burkhardt, Application and Modelling for Mathematics—Overview. In W. Blum and P.L. Galbraith (Eds.), *Modelling and Applications in Mathematics Education: The 14th ICMI Study*, Springer, 2006. http://books.google.com/books?id=XICuY-BFaHYC.

Example Tasks

1. **Core Concept A; Core Skill 2.**

   If everyone in the world went swimming in Lake Michigan, what would happen to the water level? (Would Chicago be flooded?)

2. **Core Concept A; Core Skill 2; Core Skill 7.**

   The Federal Communications Commission (FCC) needs to assign radio frequencies to seven new radio stations located on the grid in the accompanying figure. Such assignments are based on several considerations including the possibility of creating interference by assigning the same frequency to stations that are too close together. In this simplified situation it is assumed that broadcasts from two stations located within 200 miles of each other will create interference if they broadcast on the same frequency, whereas stations more than 200 miles apart can use the same frequency to broadcast without causing interference with each other. The FCC wants to determine the smallest number of frequencies that can be assigned to the six stations without creating interference.

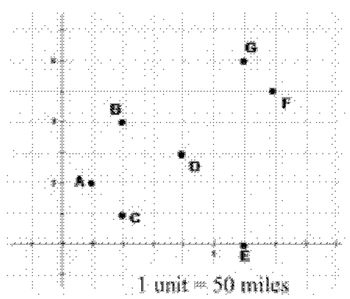


Figure 2

- Student 1 began thinking about the problem by drawing a circle of radius 200 miles centered on each radio station.
- Student 2 began thinking about the problem by drawing line segments to connect pairs of radio stations whenever the two radio stations are within 200 miles of one another.
- Student 3 began thinking about the problem by drawing line segments to connect pairs of radio stations whenever the two radio stations are more than 200 miles from one another.

Which approach seems most promising to you? Use this approach to determine the smallest number of frequencies that can be assigned to the six stations without creating interference. Justify your final answer.

3. **Core Concept A; Core Skill 2; Core Skill 3; Core Skill 5; Equations Core Concept A; Equations Core Skill 3.**

   Picture a tightly rolled spool of paper. Everyday examples might include a roll of bathroom tissue or a roll of cash-register tape. See the accompanying figure.

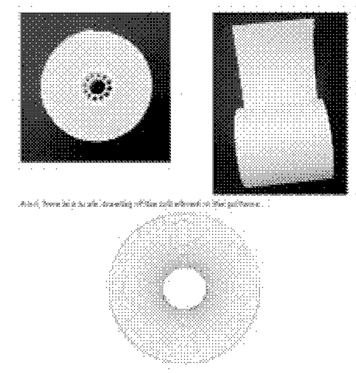


Figure 3

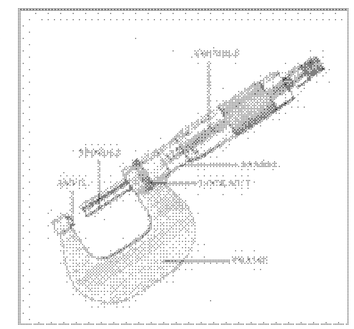


Figure 4

(a) Assuming the paper in the roll is very thin, what is the relationship between the thickness of the paper, the inner and outer diameters of the roll, and the length of the paper in the roll? Express your answer as an algebraic formula involving the four listed variables.

(b) A roll of masking tape is another example of a tightly rolled spool. In one classroom, layers of masking tape of various thicknesses were measured using a micrometer, a tool for measuring small distances (see the photo; image from http://www.design-technology.org/CDT10micrometer.htm). The table below shows the micrometer readings.

Table 1

Number of Tape Layers	0	1	2	3	4	5	6	7
Thickness (millimeters)	0.1	0.24	0.37	0.49	0.6	0.71	0.81	0.92

When you look at the first column of the table, you may wonder why zero layers of tape have a thickness of 0.1 millimeters! The reason is that these measurements were made by sticking pieces of tape to a sheet of paper (see the photo below). So the first value in the table simply represents the thickness of the piece of paper.

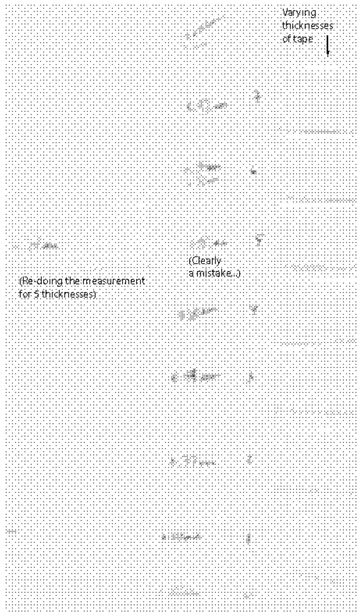


Figure 5

(i) Estimate the thickness of a single layer of tape by subtracting values in the first and second rows of Table 1.

(ii) Make a scatterplot of the data in Table 1.

(iii) Draw a straight line that you think best describes the pattern in your scatter plot.

(iv) Find the equation of this line. Explain how you determined your equation.

(v) Use your equation to estimate the thickness of a single piece of tape.

(vi) Which estimate of the thickness of a single piece of tape do you think is more accurate, the one you found in Question (i) or the one you found in Question (v)? Why?

(vii) What is your best estimate of the thickness of the paper in this experiment?

(viii) In a roll of masking tape, the inner radius is 60 millimeters and the outer radius is 80 millimeters. Using the thickness value determined in Question (v), how long is this roll of tape?

4. **Core Concept A; Core Concept B; Core Skill 1.**

- In a country with 300 million people, about how many high school math teachers will be needed? Try to estimate a sensible answer using your own everyday knowledge about the world. Write an explanation of your answer, stating any assumptions you make.
- Likewise, estimate the number of people born each day on planet earth.
- Likewise, estimate the percentage of Americans who are pregnant at any given time. Also estimate the percentage of elephants who are pregnant at any given time.

5. **Core Concept B; Core Skill 1.**

Suppose you wrote check #556 on November 5, 1995, and check #953 on September 26, 1997. What is a good guess for when you wrote check #678?

6. **Core Skill 1.**

The accompanying figure shows a conversation that occurred during a cross-country road trip.

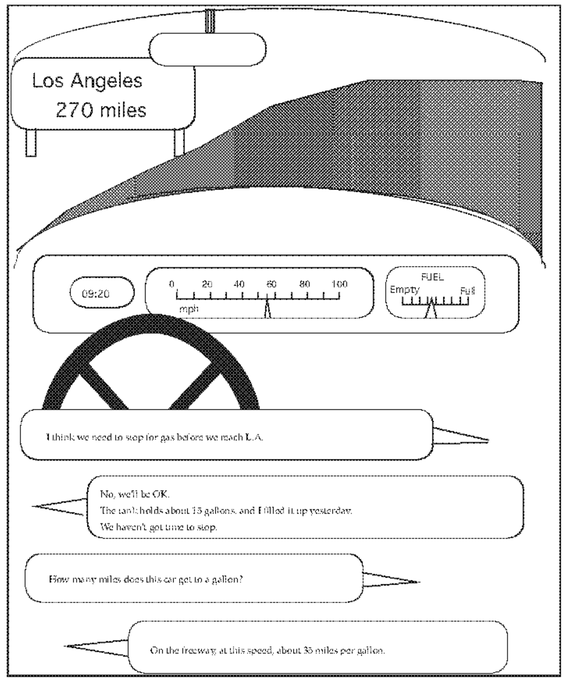


Figure 6

(a) Do they have to stop for gas? Explain your reasoning.

(b) Suppose they decide to stop for 30 minutes. At what time will they reach Los Angeles?

7. **Core Skill 1; Core Skill 2; Core Skill 3.**

A team of haymakers was assigned the task of scything two meadows, one twice the size of the other. The team worked half a day on the larger meadow. Then it split into two equal groups. The first group remained in the larger meadow and finished it by evening. The second group scythed the smaller meadow, but by evening there still remained a portion to do. This portion was scythed the next day by one haymaker in a single day's work. How many haymakers were there in the team?

8. **Core Skill 1; Core Skill 3.**

A car does y miles a year, averaging m miles per gallon.

(a) Write a formula for g, the number of gallons used in a year.

(b) If the average price of gas is $\$p$ per gallon, write a formula for the total cost $\$C$.
(c) You are thinking of changing your 15 mpg gas guzzler for a 40 mpg car. If you drive 20,000 miles each year, how much money would you save on gas at $3 per gallon? How much is this savings per week?

9. **Core Skill 1; Core Skill 3.**
Funds totaling $191,000 are designated for four schools. The distribution of the funds is to be in proportion to the number of students in each school. Student populations of the four schools are: School A, 386; School B, 1691; School C, 2109; School D, 817.
(a) Figure out how much money each school gets.
(b) Draw some sort of diagram to scale that helps show visually how the money is divided up among the four schools.
(c) Find general formulas for deciding how much money each of the four schools gets in terms of the populations of the schools and the total amount of money to be distributed.
(d) Add your formulas algebraically. What is the result? Does this make sense?

10. **Core Skill 2.**
Ann is moving to Gridville. She's looking for a house to live in. The location of her house-to-be should satisfy the following conditions:
- Ann wants to live close to the office where she works, so the distance from her house to the office should not be more than 2.5 km.
- Because of the terrible smell of the pet food factory, the distance from her house to the factory must be at least 3 km.

(a) Both conditions mention distance. Is distance measured in the same way in both situations? If yes, why? If no, why not?
(b) On the grid provided, graph the area that meets both conditions.

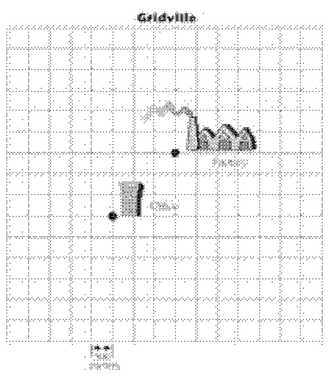


Figure 7

11. **Core Skill 2.**
A poster manufacturing company is considering different ways of making and shipping its posters. The figure below shows two kinds of tubes for posters: square tubes and hexagonal tubes.

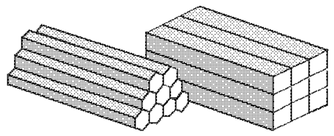


Figure 8

The square tubes are 7.5 × 7.5 cm, with a length of 75 cm. The hexagonal tubes have the same length of 75 cm but they have a diameter of 9 cm (see figure below).

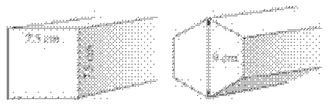


Figure 9

From the customer's perspective, a more tightly rolled poster is harder to flatten and hang on a wall. So a tube that allows the poster to be more loosely rolled is more desirable than a tube that requires the poster to be more tightly rolled. How tightly a poster is rolled is based on the amount of space measured by the largest circle that fits into the tube. See the figure below.

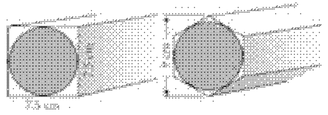


Figure 10

(a) Calculate the area of the circle in the square tube and the area of the circle in the hexagonal tube. Explain your answers.
(b) Calculate the efficiency of both tubes in terms of percentage of space used by the circular poster roll and its interior. Explain your answers.
(c) Based on the information you have now, in which tube do you think the company should pack posters? Why?
(d) The individual hexagonal tubes are packed in a 20 × 20 × 75 cm box (see the Figure below). Calculate the efficiency in terms of the percentage of the box's front that is used by the hexagons.

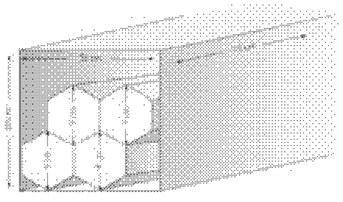


Figure 11

(e) How many of the square tubes will fit in the $20 \times 20 \times 75$ cm box? (You may want to make a sketch to help you decide.)

(f) Calculate the efficiency in terms of the percentage of the box's front that is used by the squares.

(g) Based on the information you have now, in which tube do you think the company should stack posters? Why?

(h) The poster company is considering a larger box for shipping: $45 \times 30 \times 75$ cm.

(i) How many hexagonal tubes fit in the box?

(ii) How many square tubes fit in the box?

(iii) For both the hexagonal tubes and square tubes, find the efficiency in terms of the percentage of the box's front that is used by the hexagons or squares.

(i) Based on the information you have now, in which tube do you think the company should stack posters? Why?

12. **Core Skill 2.**

Based on enrollment predictions school officials have decided that, for the next school year, the classroom trailers will be moved to the current practice football field and a new practice field will be located behind the school parking lot. Including end zones, the practice field will be 120 yards by 53 yards in order to closely approximate a standard field. However, the owner of a local nursery has donated enough grass seed to plant 81,000 square feet. Since they have more than enough grass seed for the practice field, school officials would like to plant a uniform border around the field. What are the dimensions of the 81,000 square feet rectangular area that should be planted for the practice field and uniform border?

13. **Core Skill 2.**

The accompanying figure shows the plan of a city. All curved and straight lines are streets.

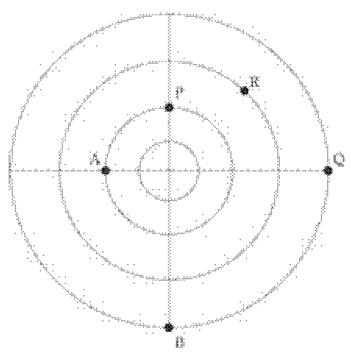


Figure 12

(a) On the figure, draw the shortest route from P to Q and the shortest route from P to R.

(b) On the figure, draw three points that are approximately equidistant from A and B (using streets).

(c) Compare and constrast this type of distance with other types of distance you have studied.

14. **Core Skill 2.**

The accompanying figure is a diagram of a miniature golf hole. Players must start their ball from one of the three tee positions. A wall separates the tees from the hole.

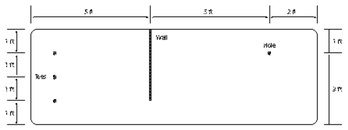


Figure 13

At which tee should the ball be placed to create the shortest "hole in one" path? What is this shortest distance? Explain your reasoning.

15. **Core Skill 2; Core Skill 3.**

All states have building codes. Many such codes can be interpreted as mathematical inequalities, since they establish limits on what can be done.

Most states have codes related to staircase construction (see the photo).

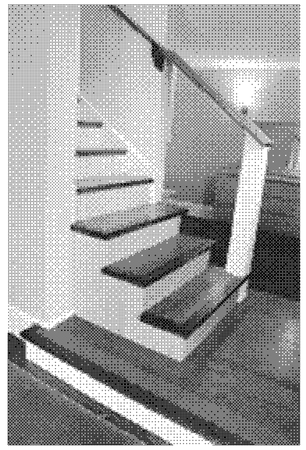


Figure 14

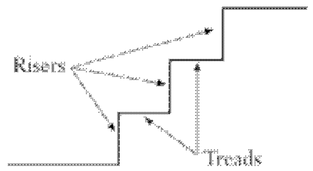


Figure 15

The most basic dimensions of a set of stairs are *riser height* and *tread depth*. A *riser* is the vertical front of a stair. The surface that you step on is called a *tread*. (See the diagram.)

(a) The Massachusetts State Building Code includes this statement:

> Maximum riser height shall be seven inches (178 mm) and minimum riser height shall be four inches (102 mm).

This statement contains two requirements for riser height. Write these requirements in two ways: as a pair of simple inequalities, and also as a compound inequality.

(b) Here is another statement from the Massachusetts State Building Code:

> Minimum tread depth shall be 11 inches (279 mm), measured horizontally between the vertical planes of the foremost projection of adjacent treads at a right angle to the tread's leading edge.

Write this requirement as an inequality.

(c) In addition, most staircases conform to this design guideline:

> The depth of a tread plus two times the height of a riser should have a total value of from 24 to 25 inches.

Write this guideline using inequalities.

(d) Label a suitable coordinate grid. Graph the solution to the system of inequalities regarding staircase riser height and tread depth.

(e) Choose an appropriate point to check your answer.

16. **Core Skill 2; Core Skill 3; Core Skill 4; Quantity; Equations, Core Skill 3.**

A manufacturer wants to design a cylindrical soda can that will hold 500 milliliters of soda. The manufacturer's research has determined that an optimal can radius is between $3\frac{1}{4}$ and 4 centimeters. What is the corresponding range of possible height measurements for the can? Explain your reasoning.

17. **Core Skill 3.**

A group of art students has formed an Arts Collective to organize an arts and crafts exhibition (see photo).

Figure 16

In order to publicize the event, they intend to use two methods. They can print one-page flyers for distribution at schools and malls. The flyers will cost only eight cents each to produce. Another method is to mail postcards about the event to selected people. This option is more expensive: twelve cents for each card plus eighteen cents per card for bulk postage. Postcards are expected to be more effective than flyers. But in order to get the twelve cent rate, they must order at least 1000 cards. The total budget for publicity is $1200.

The students must decide how many flyers to print and how many cards to order. But there are upper and lower limits on the number of each.

(a) What is the lower limit on the number of cards they will order if they want the quantity discount?

(b) Let C represent the number of cards ordered. Write the lower limit as a mathematical inequality.

(c) What is the lower limit on the number of flyers that can be produced?

(d) Let F represent the number of flyers produced. Write the lower limit as an inequality.

(e) One statement in the problem description implies an upper limit on a quantity. Explain.

(f) Write a sentence that describes this upper limit in more detail. Include the phrases "money spent on flyers" and "money spent on cards."

(g) Rewrite your answer to Question (f) as a mathematical inequality in the variables C and F.

(h) Your answers to Questions (b), (d), and (g) taken together form a system of inequalities in C and F. The solution of this system represents the range of publicity options available to the Arts Collective. The solution can be visualized with a graph. Should the boundaries of the solution region be solid lines or dashed lines? Explain.

(i) The inequalities in Questions (b) and (d) should each contain only one variable, so they are probably easier to graph. Label the axes of a two-dimensional coordinate grid with the variables C and F. Then graph the inequalities from Questions (b) and (d).

(j) Now consider the budget limit. If no flyers are produced, how many cards can be bought and mailed?

(k) If the minimum of 1000 cards is used, how many flyers can be made?

(l) Your answers to Questions (j) and (k) can each be represented by a point on the graph. Use these points to graph the boundary that represents the budget limit. Then shade only the region that satisfies all three inequalities.

(m) Check your answer. Choose any point that is inside the shaded region, and verify that its coordinates satisfy all three inequalities.

18. **Core Skill 3.**

A coffee shop sells several kinds of coffee. The shop also uses some of its coffees to make its own custom blends. Coffee A sells for $6 a pound. Coffee B sells for $10 a pound. The shop's manager wants to create a blend of the two types that sells for $7 a pound. The manager wants to make 10 pounds of this blend. How many pounds of each type of coffee should be in the 10 pounds of blend?

19. **Core Skill 3.**

When summer approaches, Desmond and Farid look forward to baseball games, movies, and weekends at the local amusement park. Because all of these things cost money, Desmond and Farid decide to start a lawn service to earn money.

Desmond can devote 10 hours a week to this new venture, while Farid can devote 4 hours. The boys realize it takes less time to trim the edge than to mow, so they decide that Desmond can do all the mowing and Farid can do the edging. After surveying the neighborhood, they determine that their clients will fall into one of two categories: standard-sized interior lots or large corner lots.

From working on their own yards the boys know it will take about an hour to mow and half an hour to edge a standard-sized yard. A larger yard will take 45 minutes to edge and 2 hours to mow.

Based on research he has done in his neighborhood, Desmond wants to set prices at $20 per large yard and $15 for each standard-sized yard. Each price is the total price that includes edging and mowing.

On the one hand, the boys might decide to do more large yards, each of which brings more money. Or they might decide to do more standard yards, each of which takes less time. It's not obvious which approach will earn them the most money. The goal of this problem is to find the best approach.

(a) Use the table below to organize the information in the situation:

(b) Using the information in the table to assist you, write a system of inequalities to represent all the constraints that define the boys' problem situation.

(c) Farid and Desmond's goal is to maximize their earnings from the lawn service. Find a formula that expresses their weekly earnings P in terms of x and y.

(d) Graph the system of inequalities representing the constraints and shade the feasible region—the region representing all of the values of x and y that obey all of the constraints.

	x (# of standard yards)	y (# of large yards)	Constraint
Number of hours mowing			
Number of hours edging			

Table 2: Desmond and Farid's situation

(e) What are the vertices of your feasible region? Explain how you found them.
(f) Use the vertices (from Question (e)) and the earnings formula to find the maximum Farid and Desmond can earn in one week with the given constraints.
(g) How many and which size yards will Farid and Desmond need to mow and edge to maximize their earnings?

20. **Core Skill 3.**

This problem is difficult and would merit an extended treatment in class; it is not meant to be one in a series of routine "word problems" on a worksheet.

Two boats (boat 1 and boat 2) start off from opposite sides of a lake, each heading for the starting point of the other. They pass each other 800 yards from the starting point of boat 1. They continue to the starting point of the other boat, turn around, and return. This time, they pass each other 300 yards from the (original) starting point of boat 2. How wide is the lake? (Each boat travels at a fixed speed. Ignore turnaround times.)

21. **Core Skill 3.**

An academic team is going to a state mathematics competition. There are 30 people going on the trip. There are 5 people who can drive and 2 types of vehicles, vans and cars. A van seats 8 people, and a car seats 4 people, including drivers. How many vans and cars does the team need for the trip? Is more than one option available? Explain your reasoning.

22. **Core Skill 4.**

Clara purchased a used car for \$8400. She estimates that each year she owns the car it will depreciate (lose value) by 12% of its value the previous year.

(a) According to Clara's assumption, the car's value after 1 year from the purchase date will be \$7392. Check this yourself.
(b) What will be the car's value 2, 3, and 4 years from the date of purchase?
(c) Clara plans to keep the car until its value reaches \$4000. By Clara's assumption, what is the minimum number of years from the date of purchase that the car's value will be less than \$4000? Show your work.

23. **Core Skill 4.**

If it is never refreshed, the water in a swimming pool becomes polluted after some time. Urea that comes into the water via body secretions is one of the substances that pollute swimming pools.

In this problem, presume an increase in the amount of urea of 500 g per day, caused by 1000 swimmers a day. Suppose the amount of urea present in the water is represented as u.

(a) Find a recursive formula for the quantity of urea in the water (per day).
(b) When there are 4000 g of urea in the water, the swimming pool will be closed to the public because the water has to be cleaned. The cleaning equipment can remove 10% of the amount of urea present in one day, so the first day, 400 g of urea can be removed. The second day, 10% of the remaining amount of urea will be removed, and so on.
   (i) What recursive formula describes this process of cleaning?
   (ii) How many days does it take before 50% of the 4000 g of urea is removed from the water?
(c) A better method of keeping the amount of urea under control is to let the people swim during the day and to refresh the water during the night. Starting with a clean pool (no urea in the water), swimmers will add 500 g of urea to the water every day. Every night, 10% of the urea in the pool will be removed.
   (i) Calculate the amount of urea in the pool at the beginning of day 2 (after one day of swimming and one night of refreshing).
   (ii) Calculate the amount of urea at the beginning of day 3.
   (iii) Find a recursive formula for the amount of urea at the beginning of a day.
   (iv) Will the amount of urea continue to increase without bound day after day, or will the amount of urea stabilize at some point? Explain how you found this.

24. **Core Skill 4.**

At the You're Toast, Dude! toaster company, the weekly cost to run the factory is \$1400 and the cost of producing each toaster is an additional \$4 per toaster.

(a) Write a function rule representing the weekly cost in dollars, $C(x)$, of producing x toasters.
(b) What is the total cost of producing 100 toasters in one week?
(c) If you produce 100 toasters in one week, what is the total production cost per toaster?
(d) Will the total production cost per toaster always be the same? Justify your answer.
(e) Write a function rule representing the total production cost per toaster $P(x)$ for producing x toasters.
(f) Answer the following questions:
   (i) What is the production cost per toaster if 300 toasters are produced in one week? If 500 toasters are produced in one week?
   (ii) What happens to the total production cost per toaster as the number of toasters produced increases? Explain your answer.
   (iii) How many toasters must be produced to have a total production cost per toaster of \$8?

25. **Core Skill 4.**

A recommended adult dosage of the cold medication NoMoreFlu is 16 mL. NoMoreFlu causes drowsiness when there are more than 4 mL in one's system, in which case it is unsafe to drive, operate heavy machinery, etc. The manufacturer wants to print a warning label telling people how long they should wait after taking NoMoreFlu for the drowsiness to pass. The typical metabolic rate is such that one quarter of the NoMoreFlu is lost every four hours.

(a) If a person takes the full dosage, how long should adults wait after taking NoMoreFlu to ensure that there will be
   (i) Less than 4 mL of NoMoreFlu in their system?
   (ii) Less than 1 mL in their system?
   (iii) Less than 0.1 mL in their system?
(b) What do you think the warning label should say? Design the label and explain the thinking behind your design.

26. **Core Skill 4; Core Skill 7.**

Among the many species that have been endangered at one time or another is the desert bighorn sheep. The desert bighorn sheep are sensitive to human-induced problems in the environment and their numbers are therefore a good indicator of land health.

It is estimated that in the 1600s, there were about 1.75 million bighorn sheep in North America. By 1960, the bighorn sheep population in North America had dropped to about 17,000. There appears to have been a similar decline in west Texas, where wildlife biologists have data showing that in 1880, there were around 1,500 bighorn sheep in west Texas and by 1955, the population had dwindled to 25 in that area. Efforts to reintroduce desert bighorn sheep in west Texas began around 1957 and by 1993, there were about 400 desert bighorn sheep in west Texas roaming free or in captivity.

(a) Assume that the annual percentage decrease in the bighorn sheep population in west Texas was fairly constant from 1880 to 1955. Model the bighorn sheep population for any year in this range with an exponential function of the form $P = a \cdot b^t$, where t is the number of years since 1880, a is the population of the bighorn sheep in west Texas in 1880, b is the annual rate of retention, and P is the annual bighorn sheep population in west Texas for the given year.

(b) Assume that, starting in 1957 when reintroduction began, the annual percentage increase in the bighorn sheep population in west Texas was fairly constant. Model the bighorn sheep population for any year since 1957 with the exponential function, $P = a \cdot b^t$, where t is the number of years since 1957, b is the annual rate of growth, P is the annual bighorn sheep population in west Texas for the given year, and a is the bighorn sheep population in 1957.

(c) Describe the mathematical domain for the two functions in Questions (a) and (b). Describe reasonable domain values for the actual situations modeled by these functions. Explain any differences between the two types of domains (mathematical and situational).

(d) From 1880 to 1955, by what percentage was the population decreasing annually? From 1957 to 1993, by what percentage was the population increasing annually?

(e) By what year had the sheep population dropped to 750 or fewer? Use numerical, graphical, or algebraic methods and explain your reasoning.

(f) If the reintroduction program continues, in what year will the bighorn sheep population again be at least 750? Use numerical, graphical, or algebraic methods and explain your reasoning.

(g) In 2001, it was reported that there were 500 bighorn sheep in west Texas. Is this number consistent with the number predicted by the exponential model for reintroduction? Why or why not?

27. **Core Skill 5.**

Our school has to select a girl for the long jump at the regional championship. Three girls are in contention. We have a school jump-off. Their results, in meters, are given in the accompanying table.

Elsa	Miki	Aisha
3.25	3.55	3.67
3.95	3.88	3.78
4.28	3.61	3.92
2.95	3.97	3.62
3.66	3.75	3.85
3.81	3.59	3.73

Table 3: Data from the jump-off; distances are given in meters.

Hans says, "Aisha has the longest average. She should go to the championship."

Do you think Hans is right? Explain your reasoning.

28. **Core Skill 5.**

The figure below shows two graphs: one showing the amount of water consumed in the United States from 1950 through 1980, and another graph showing the number of people living in the U.S. during those years.

T is the total amount of water consumed and B is the population. The vertical scale on the left side of the graph belongs to the graph of T. On the right side you see the vertical scale that belongs to the graph of B.

So, in 1970, the total water consumption was about 1340 billion liters per day and the population size was about 200 million people.

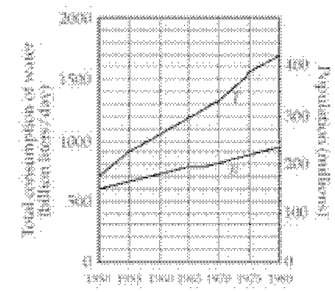


Figure 17

(a) Complete the table below with data from the graphs.

Year	1950	1955	1960	1965	1970	1975	1980
T (billion liters per day)	700				1340		
B (millions)	145				200		

(b) Use the data from the table to complete the graph below.

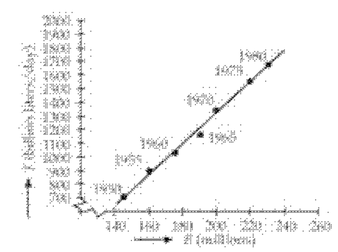


Figure 18

(c) Draw a straight line that you think best describes the pattern in your scatter plot.

(d) Find the equation of this line. Explain how you determined your equation.

(e) In 1980, researchers predicted that every five years the total consumption of water would increase by 110 to 200 billion liters per day.

(i) If that prediction is correct, what will be the minimum total consumption of water in the year 2000? Explain your answer.

(ii) What will be the maximum total consumption of water in the year 2000? Show how you got your answer.

(f) Use the experts' prediction for water-consumption increase stated in Question (e) to write equations for predicting the minimum and maximum total water consumption per day in any given year.

(g) Researchers don't expect that the increase in water consumption will continue forever. They predict that 5000 billion liters per day will be the maximum amount of water available. Between which years will people consume 5000 billion liters of water per day, according to researchers? Explain.

29. **Core Skill 5; Core Skill 6.**

The data in the accompanying table shows the annual median earnings for female and male workers in the United States from 1984 to 2004.

Year	Women's median earnings (in dollars)	Men's median (in dollars)
1984	8675	17026
1985	9328	17779
1986	10016	18782
1987	10619	19818
1988	11096	20612
1989	11736	21376
1990	12250	21522
1991	12884	21857
1992	13527	21903
1993	13896	22443
1994	14323	23656
1995	15322	25018
1996	16028	25785
1997	16716	26843
1998	17716	28755
1999	18440	30079
2000	20267	30951
2001	20851	31364
2002	21429	31647
2003	22004	32048
2004	22256	32483

(a) Create two scatter plots, one for women's median earnings over time and one for men's median earnings over time. Describe two things you notice about the scatter plots.
(b) Terry and Tomás are trying to decide what type of model will most accurately represent the data. Terry thinks that a linear model might be most appropriate for each scatter plot. Help Terry find reasonable linear function rules for each scatter plot. Explain how you found these.
(c) Using the linear models, will women's annual median earnings ever equal those of men? Why or why not?
(d) Tomás thinks that an exponential model might be most appropriate for each scatter plot. Help Tomás find reasonable exponential function rules for each scatter plot. Explain how you found these.
(e) Using the exponential models, will women's annual median earnings ever equal those of men? Why or why not?
(f) If you answered yes to either Question (c) or question (e), use that model to determine the first year women will have higher median earnings than men. Explain how you found your answer.

(g) For each year listed in the table, find the ratio of women's to men's annual median earnings expressed as a percentage. Use the data to create a scatter plot of percentage versus year. Based on this graph, do you think women's annual median earnings will ever equal those of men? Why or why not? Considering the results of the scatter plot in Question (g) above, do you think the linear model or exponential model makes more sense? Why?

30. **Core Skill 5; Core Skill 7.**

Karnataka is a state in southwest India. The accompanying table is agricultural data on fertilizer use and grain crop yield in Karnataka. Fertilizer is measured in 100,000 tons. Crop yield is measured in 10 kilograms per hectare.

Year	Fertilizer ($\times 10^5$ tons)	Yield ($\times$ 10 kg/ha)
1956	0.06	52.3
1966	0.38	45.8
1970	1.32	19.1
1974	1.95	88.9
1975	2.32	82.9
1976	2.03	93.9
1977	2.08	79.2
1978	2.9	97.9
1979	3.72	101.7
1980	3.59	102.9
1981	3.54	91.9
1982	3.87	102.2
1983	3.83	85.8
1984	4.87	102.1
1985	5.9	95.4
1986	5.55	81.19
1987	5.66	97.03
1988	5.58	83.57
1989	5.75	93.5

Throughout the years over which these data were gathered, the amount of land in cultivation remained fairly constant.

(a) Find a mathematical function that you think does a good job of modeling the relationship between fertilizer use and grain crop yield. Explain how you did it.
(b) Use the function you have chosen to predict the yield if fertilizer use is 500,000 tons.
(c) How comfortable are you with the prediction you made in Question (b)? Explain.
(d) What advice can you offer the government of Karnataka about fertilizer use? Explain.

31. **Core Skill 6.**

"My sixty-year old mother, who lives in New York, gets frightened by newspapers. One day she is afraid

of being a victim of crime, the next she is frightened of being killed in a road accident, then it's terrorists, and so on."

(a) Using reliable websites with national statistics...

  (i) Estimate the chances of my mother being a victim of the above events during the next year.

  (ii) Compare the likelihood of these events with the probability that women of her age will die during the coming year.

(b) Why do you suppose people fear such unrealistic dangers?

32. **Core Skill 6.**

In the general population, about 1 baby in 8,000 dies in an unexplained "crib death." The cause or causes are at present unknown. Three babies in one familiy have died. The mother is on trial, and you are on the jury. An expert witness says: "One crib death is a family tragedy; two is deeply suspicious; three is murder. The odds of even two deaths in one family are 64 million to 1."

Think about the reasoning underlying this testimony. Check the expert's math, of course, but also explain what assumptions are being made. Would the expert's testimony lead you to decide that a murder had taken place?

Sources

1. Howe, Roger
2. Adapted from Focus in High School Mathematics: Reasoning and Sense Making, copyright 2009 by the National Council of Teachers of Mathematics. All rights reserved.
3. communicated by Phil Daro; Shannon, Ann; Zimba, Jason
4. Shell Centre for Mathematical Education/Mathematics Assessment Resource Service (MARS); Roger Howe; Stephen Hawking (1994), *Black Holes and Baby Universes And Other Essays*, ISBN-13 9780553374117, Bantam Books, p. 1; Jason Zimba
5. communicated by Phil Daro
6. Reproduced with the permission of New Standards, University of Pittsburgh, and the National Center on Education and the Economy
7. communicated by Phil Daro
8. Adapted from Shell Centre for Mathematical Education/Mathematics Assessment Resource Service (MARS)
9. communicated by Phil Daro
10. COMAP
11. COMAP
12. Georgia Department of Education
13. COMAP
14. Adapted from Washington Office of the Superintendent of Public Instruction
15. COMAP
16. Adapted from Washington Office of the Superintendent of Public Instruction
17. COMAP
18. COMAP
19. Charles A. Dana Center and Achieve, Inc. (2007). Secondary Assessments and Tasks. *Mathematics Benchmarks, Grades K–12.* Austin: Authors. Online at `www.utdanacenter.org/k12mathbenchmarks`. Copyright Charles A. Dana Center/Agile Mind

20. Howe, Roger
21. Adapted from Washington Office of the Superintendent of Public Instruction
22. COMAP
23. COMAP
24. Charles A. Dana Center and Achieve, Inc. (2007). Secondary Assessments and Tasks. *Mathematics Benchmarks, Grades K–12.* Austin: Authors. Online at `www.utdanacenter.org/k12mathbenchmarks`.
25. Adapted from Washington Office of the Superintendent of Public Instruction
26. Charles A. Dana Center and Achieve, Inc. (2007). Secondary Assessments and Tasks. *Mathematics Benchmarks, Grades K–12.* Austin: Authors. Online at `www.utdanacenter.org/k12mathbenchmarks`.
27. Burkhardt, Hugh
28. COMAP
29. Charles A. Dana Center and Achieve, Inc. (2007). Secondary Assessments and Tasks. *Mathematics Benchmarks, Grades K–12.* Austin: Authors. Online at `www.utdanacenter.org/k12mathbenchmarks`.
30. COMAP
31. Adapted from Shell Centre for Mathematical Education/Mathematics Assessment Resource Service (MARS)
32. Adapted from Shell Centre for Mathematical Education/Mathematics Assessment Resource Service (MARS)

Statistics

Core Concepts

A Statistical methods take variability into account to support making informed decisions based on quantitative studies designed to answer specific questions.

B Visual displays and summary statistics condense the information in data sets into usable knowledge.

C Randomness is the foundation for using statistics to draw conclusions when testing a claim or estimating plausible values for a population characteristic.

D The design of an experiment or sample survey is of critical importance to analyzing the data and drawing conclusions.

Core Skills

1. Formulate questions that can be addressed with data. Identify the relevant data, collect and organize it to respond to the question.
2. Use appropriate displays and summary statistics for data.
3. Interpret data displays and summaries critically; draw conclusions and develop recommendations.
4. Draw statistical conclusions involving population means or proportions using sample data.
5. Evaluate reports based on data.

Example Tasks

1. **Core Concept A, Core Skill 5.**
An American Automobile Association report includes the graph shown below.

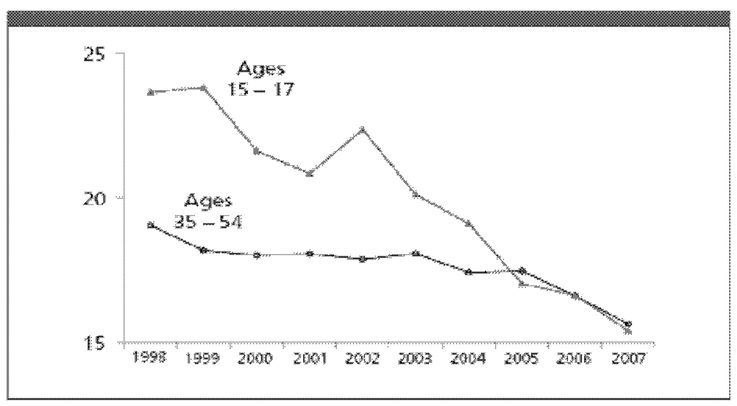


Figure 1: Number of drivers involved in fatal crashes per 100,000 population, 1998–2007.

(a) Provide a written version of the information provided by this graph.
(b) The graph seems to imply that teen-aged drivers are becoming just as good as adult drivers in the 35-54 age group. Is that necessarily true? What other variables may have to be taken into account in comparing drivers for the two age groups?

(c) One of the variables that may have been listed in part 2 is the number of miles driven. How do you think rates reported in "number of drivers involved in fatal crashes per 100,000 miles driven" would differ from the rates on the graph?

2. **Core Concept B, Core Skill 2.**
Suppose the summary statistics for the number of inches of rainfall in Northampton, MA for the past 117 years, beginning in 1877, are given below.

N	Mean	Median	Min	Max	Q1	Q3
117	42.8	41.4	22.5	68.0	37.3	48.4

(a) Sketch a boxplot for these data and describe the key features of the data distribution.
(b) The news media reported that in a particular year, there were only 38 inches of rainfall. Is it appropriate for the news media to use the word only in the statement? In other words, is 38 inches an unusually small amount of rainfall for Northampton? Explain your answer.

3. **Core Concept B, Core Skill 2.**
Students in Ms. Garth's Algebra II class wanted to see if there are correlations between test scores and height and between test scores and time spent watching television. Before the students began collecting data, Ms. Garth asked them to predict what the data would reveal. Answer the following questions that Ms. Garth asked her class.

- Do you think students' heights will be correlated to their test grades? If you think a correlation will be found, will it be a positive or negative correlation? Will it be a strong or weak correlation?
- Do you think the average number of hours students watch television per week will be correlated to their test grades? If you think a correlation will be found, will it be a positive or negative correlation? Will it be a strong or weak correlation?

The students then created a table in which they recorded each student's height, average number of hours per week spent watching television (measured over a four-week period), and scores on two tests. Use the actual data collected by the students in Ms. Garth's class, as shown in the table below, to answer the following questions.

Student	Height (in inches)	TV hrs/week (average)	Test1	Test2
1	60	30	60	70
2	65	12	80	85
3	51	30	65	75
4	76	20	85	85
5	66	10	100	100
6	72	20	78	88
7	59	15	75	85
8	58	12	95	90
9	70	15	75	90
10	67	11	90	90
11	65	16	90	95
12	71	20	80	85
13	58	19	75	85

(a) Which pairs of variables seem to have a positive correlation? Explain.
(b) Which pairs of variables seem to have a negative correlation? Explain.
(c) Which pairs of variables seem to have no correlation? Explain.
(d) For each pair of variables listed below, create a scatter plot with the first variable shown on the y-axis and the second variable on the x-axis. Are the two variables correlated positively, correlated negatively, or not correlated? Determine whether each scatter plot suggests a linear trend. Do the plots confirm your decisions in parts (a)-(c) above?
- Score on test 1 versus hours watching television
- Height versus hours watching television
- Score on test 1 versus score on test 2
- Hours watching television versus score on test 2
- Height versus score on test 1

(e) Using the statistical functions of your graphing calculator, determine a line of best fit for each scatter plot that suggests a linear trend.

4. **Core Concept B, Core Skill 2, Core Skill 3.**

The table below[1] shows the reported high school graduation rates (percent of 9th grade cohorts who actually graduate), the per-pupil expenditure, PPE (in hundreds of dollars), and the percent of total taxable resources the state spends on education, PTR, for a sample of 15 states.

State	Graduation Rate	PTR	PPE
Alabama	59.0	3.4	79.24
Alaska	65.1	3.5	85.62
California	70.7	3.3	70.81
Colorado	74.6	3.0	79.39
Florida	60.5	3.0	75.39
Kansas	74.4	3.8	88.62
Kentucky	70.0	3.4	79.78
Louisiana	61.4	2.9	85.82
Michigan	69.1	4.5	91.97
Montana	76.2	3.7	89.51
Nevada	54.0	2.8	71.41
New Hampshire	76.0	3.9	93.23
New Mexico	60.1	3.7	84.31
North Dakota	79.4	3.1	91.81
Wisconsin	77.3	4.1	101.99

(a) Use technology to plot Graduation Rate versus PPE on a scatter plot that allows prediction of Graduation Rate from PPE and describe the shape of the distribution.
(b) If a linear shape is apparent, use statistical software or calculator capability to fit a least squares line to summarize the nature of that trend.

[1]Source: EPE Research Center, Education Week

(c) Interpret the slope of the least squares line found in part 2 in the context of the data.
(d) Is the relationship between Graduation Rate and PPE stronger than the one between Graduation Rate and PTR? Explain.

5. **Core Concept B, Core Skill 3.**

How did housing prices change during the turbulent economic times around 2008? One way to answer the question is to compare median prices for a variety of locations over a short time span. The data display below shows box plots of the median sales price (in thousands) of existing single-family houses for a sample of 25 metropolitan areas around the United States at mid-year 2005 and 2008.

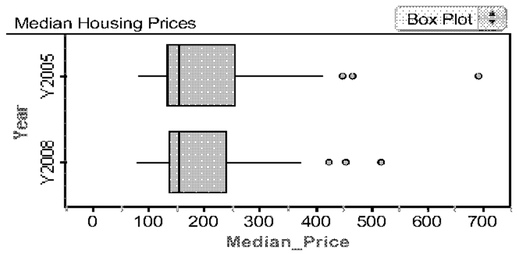


Figure 2

(a) Describe the key features of the shift in prices from 2005 to 2008.
(b) The medians of the distributions appear to differ by only a very small amount. Do you think the means would differ by a larger amount? Explain your reasoning.
(c) Why do you think the median is often used for housing prices rather than the mean?
(d) The accompanying scatter plot shows the median housing prices for 25 metropolitan areas in 2005 paired with the prices in 2008.
  (i) Describe the shape, trend and strength of the relationship between these two variables.
  (ii) Sketch the line y=x on this plot. What does the plot show with regard to the nature of the change in median prices?

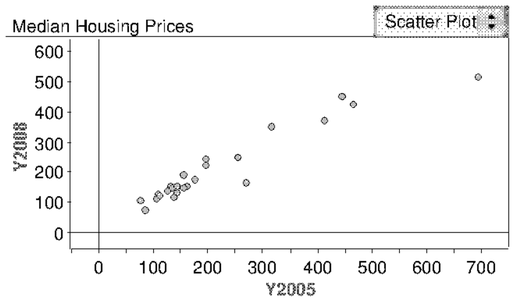


Figure 3

6. **Core Concept B, Core Skill 3.**

The histogram below shows the mean annual temperatures in Pasadena for the years 1951 to 2000.

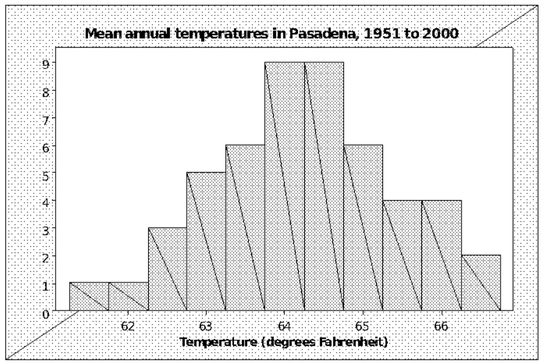


Figure 4

(a) Describe the distribution of mean annual temperatures at Pasadena.

(b) The scatter plot below shows the mean annual temperatures in Pasadena for the years 1951 to 2000. What do we learn from the scatter plot that is not obvious from the histogram.

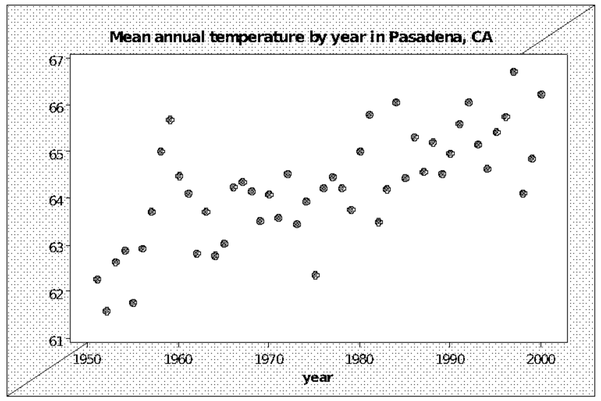


Figure 5

(c) What do we learn from the histogram that is not obvious from the scatter plot.

7. **Core Concept B, Core Skill 3.**

To determine the amount of sugar in a typical serving of breakfast cereal, a student randomly selected 60 boxes of different types of cereal from the shelves of a large grocery store. The student noticed that the side panels of some of the cereal boxes showed sugar content based on one-cup servings, while others showed sugar content based on three-quarter-cup servings. Many of the cereal boxes with side panels that showed three-quarter-cup servings were ones that appealed to young children, and the student wondered whether there might be some difference in the sugar content of the cereals that showed different-size servings on their side panels.

To investigate the question, the data were separated into two groups. One group consisted of 29 cereals that showed one-cup serving sizes; the other group consisted of 31 cereals that showed three-quarter-cup serving sizes. The boxplots shown below display sugar content (in grams) per serving of the cereals for each of the two serving sizes.

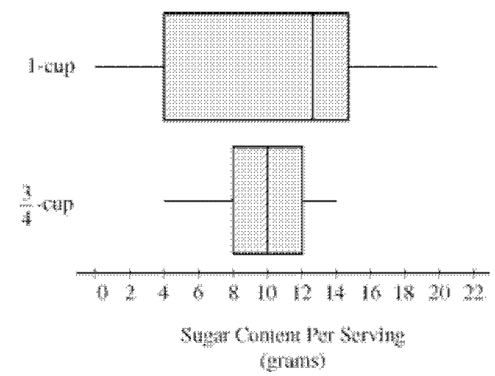


Figure 6

(a) Compare the distributions of sugar content per serving for the two serving sizes of cereals.

After analyzing the boxplots above, the student decided that instead of a comparison of sugar content per recommended serving, it might be more appropriate to compare sugar content for equal-size servings. To compare the amount of sugar in serving sizes of one cup each, the amount of sugar in each of the cereals showing three-quarter-cup servings on their side panels was multiplied by $4/3$. The bottom boxplot shown below displays sugar content (in grams) per cup for those cereals that showed a serving size of three-quarter-cup on their side panels.

(b) What new information about sugar content do the boxplots below provide?

(c) Based on the boxplots below, how would you expect the mean amounts of sugar per cup to compare for the different recommended serving sizes? Explain your reasoning.

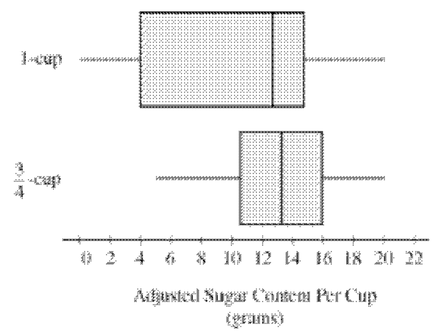


Figure 7

8. **Core Concept B, Core Skill 3.**

Two pain relievers, A and B, are being compared for relief of post-surgical pain. Twenty different strengths (doses in milligrams) of each drug were tested. Eight hundred post surgical patients were randomly divided into 40 different groups. Twenty groups were given drug A. Each group was given a different strength. Similarly, the other twenty groups were given different strengths of drug B. Drug strengths used ranged from 210 to 400 milligrams. Thirty minutes after receiving the drug, each patient was asked to describe his or her pain relief on a scale of 0 (no decrease in pain) to 100 (pain totally gone).

The strength of the drug, given in milligrams, and average pain rating for each group are shown in the scatter plot below. Drug A is indicated with A's and drug B with B's.

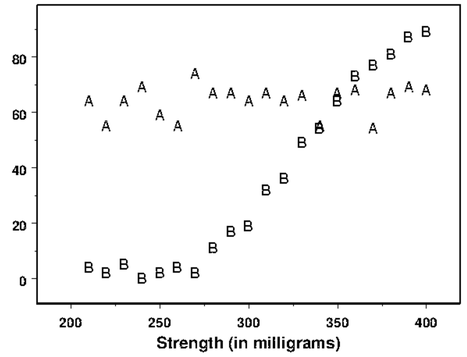


Figure 8

(a) Based on the scatter plot, carefully describe the effect of drug A and how it is related to strength in milligrams.

(b) Based on the scatter plot, carefully describe the effect of drug B and how it is related to strength in milligrams.

(c) Which drug would you give and at what strength, if the goal is to get pain relief of at least 50 at the lowest possible strength? Justify your answer based on the scatter plot.

9. **Core Concept B, Core Skill 3.**

SAT mathematics scores for a particular year are approximately normally distributed with a mean of 510 and a standard deviation of 100.

(a) What is the probability that a randomly selected score is greater than 610? Greater than 710? Between 410 and 710?

(b) If a student is known to score 750, what is the student's percentile score (the proportion of scores below 750)?

10. **Core Concept C, Core Skill 3, Core Skill 4.**

There is little doubt that caffeine stimulates bodily activity, but how much does it take to produce a significant effect? This is a question that involves measuring the effect of two or more interventions (generally called treatments) and deciding if the different interventions have differing effects. To obtain a partial answer to the question on caffeine, it was decided to compare two levels of caffeine with a control of no caffeine on a response to a finger tapping exercise.

Thirty male students were randomly assigned to one of three treatment groups of 10 students each. Each group was given one of three doses of caffeine (0, 100, and 200 milligrams) and two hours later the students were given a finger tapping exercise. The response is the number of taps per minute, as shown in the table below.[2]

Finger taps per minute from a caffeine experiment

0 mg caffeine	100 mg caffeine	200 mg caffeine
242	248	246
245	246	248
244	245	250
248	247	252
247	248	248
248	250	250
242	247	246
244	246	248
246	243	245
242	244	250
Mean:244.8	246.4	248.3

The accompanying plot shows that the data sets tend to be somewhat symmetric and have no extreme data points (outliers) that would have undue influence on the analysis. The sample mean, then, is a suitable measure of center, and will be used as the statistic for comparing treatments.

[2] Source: Draper and Smith (1981) Applied Regression Analysis, John Wiley and Sons

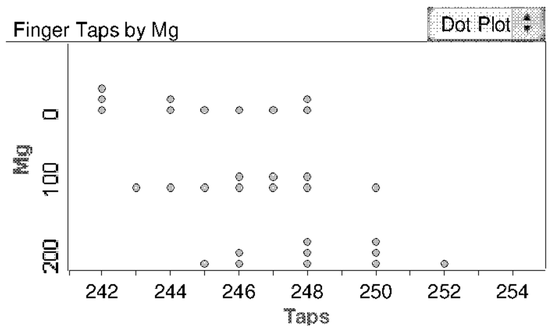


Figure 9

(a) The mean for the 100 mg data is 1.6 taps larger than that for the 0 mg data. In light of the variation in the data, is that enough to be confident that the 100 mg treatment truly results in more tapping activity than the 0 mg treatment? In other words, could this difference of 1.6 taps be explained simply by the randomization (the luck of the draw, so to speak) rather than any real difference in the treatments?

Assume for the moment that the 100 mg treatment has no effect on the tapping, and the difference in the means is simply due to the randomization. Would a difference of 1.6 units be likely to occur under these conditions? An empirical answer to this question can be found by re-randomizing the first two groups many times and studying the distribution of differences in sample means. The re-randomizing is accomplished by combining the data in the first two columns, randomly splitting them into two groups of ten each representing 0 and 100 mg, and then calculating the difference in the sample means. (This can be expedited with the use of technology.)

The plot below shows the differences produced in 200 re-randomizations of the data for 100 and 0 mg. The observed difference of 1.6 taps is equaled or exceeded 18 out of 200 times, 9% of the runs. Do these data provide strong evidence to reject the claim that the control and the 100 mg treatment do not differ with respect to their mean finger tapping counts? Explain your reasoning and the nature of the error that you may have made.

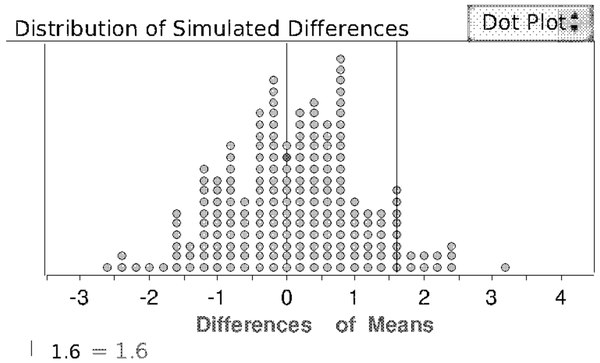


Figure 10

(b) What about the 200 mg treatment as compared to 0 mg? Construct a similar re-randomization process to decide if the difference between the mean of the 200 mg treatment and that of the 0 mg treatment is to large to be explained by chance alone. Explain your decision process and the nature of the error you may have made.

11. **Core Concept C, Core Skill 4.**

A random number generator is said to generate even or odd digits independently and each with probability 0.5. Consider the following scenarios and questions:

I. The generator generates three odd digits in a row, with probability $(.5)^3 = 0.125$ under the model given above. Does this suggest that the model is questionable?

II. The generator generates four odd digits in a row, with probability $(.5)^4 = 0.0625$ under the model given above. Does this suggest that the model is questionable?

III. The generator generates five odd digits in a row, with probability $(.5)^5 = 0.03125$ under the model given above. Does this suggest that the model is questionable?

(a) At which point in the sequence of odd digits would you begin to question the truth of the model? (If five odds in a row are not enough, continue the sequence until doubt sets in.)

(b) Write a short description explaining the interactive roles of probability and data in the decision-making process.

12. **Core Concept C, Core Skill 4.**

A random sample of 100 students from a specific high school resulted in 45% of them favoring a plan to implement block scheduling. Is it plausible that a majority of the students in the school actually favor the block schedule? Simulation can help answer the questions.

The accompanying plot shows a simulated distribution of sample proportions for samples of size 100 from a population in which 50% of the students favor the plan, and another distribution from a population in which 60% of the students favor the plan. (Each simulation contains 200 runs.) What do you conclude about the plausibility of a population proportion of 0.50 when the sample proportion is only 0.45? What about the plausibility of 0.60 for the population proportion?

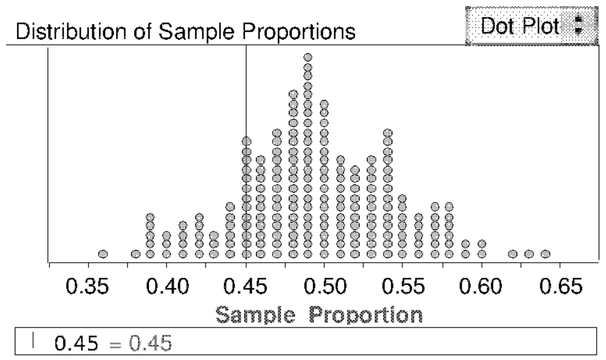


Figure 11

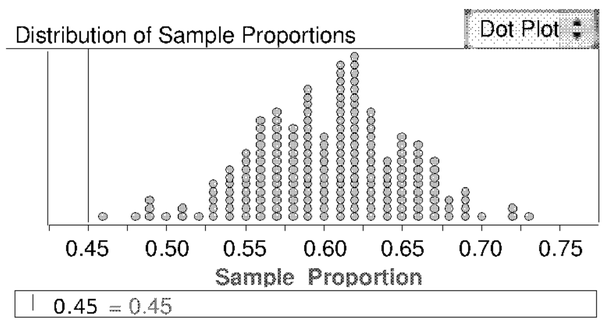


Figure 12

13. **Core Concept C, Core Skill 4.**

A tremendous amount of bottled water is being consumed these days. Do the consumers really think bottled water tastes better than city water or well water? Or, is this just a fad? To test tastes preferences in one school, $n = 50$ students were given samples of bottled water, well water from typical area homes having wells, and city water. Each student tasted all three types of water in random order. The results: 26 preferred bottled water, 16 preferred city water and 8 preferred well water.[3]

(a) Suppose the students running the experiment decided to check the claim that students had no preference for bottled water over non-bottled water. Under this claim and the randomization of the order of tasting, the preference for bottled over non-bottle water should have probability of about $p = 0.5$. The probabilities for X, the number of students choosing bottled water when $n = 50$ and $p = 0.5$, is shown below, with a vertical line at $X = 26$.

[3]Source: http://library.thinkquest.org/04apr/00222/text/survey.htm

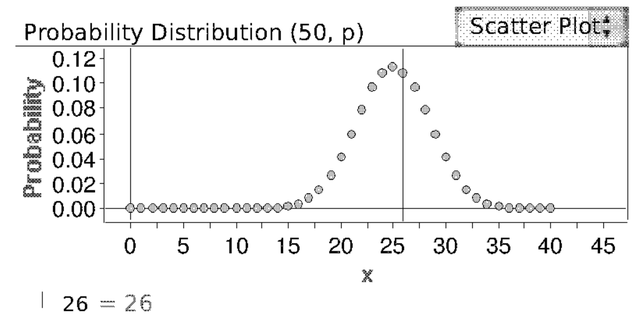


Figure 13

Does this provide strong evidence to reject the claim that there is no preference for bottled water? Explain your reasoning.

(b) Some students suggest that making this into a two-choice problem is incorrect, because there are really three choices for each taster. So, the correct claim to test is that students have no preference among bottled water, well water and city water. Under this claim the preference for bottled water should have probability of about $p = 0.33$. The probabilities for X, the number of students choosing bottled water with $n = 50$ and $p = 0.33$, is shown below, with a vertical line at $X = 26$.

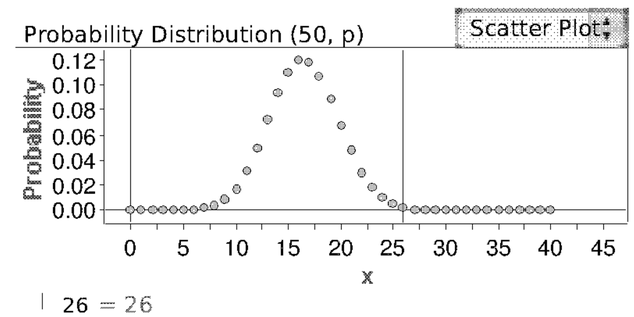


Figure 14

Does this provide strong evidence to reject the claim of no preference for bottled water among the three choices? Explain your reasoning.

(c) Which of the two claims outlined above seems more appropriate for this experiment?

(d) In the decisions made above, explain the error that could have been made.

14. **Core Concept D.**

From a class containing 12 girls and 10 boys, three students are to be selected to serve on a school disciplinary panel. Here are four different methods of making the selection.

I. Select the first three names on the class roll.
II. Select the first three students who volunteer.
III. Place the names of the 22 students in a hat, mix them thoroughly, and select three names from the mix.
IV. Select the first three students who show up for class tomorrow.

Which is the best sampling method, among these four, if you want the school panel to represent an unbiased view of the opinions of your class.

15. **Core Concept D, Core Skill 1.**

Biology students are to conduct a study of the effect of different durations of light and dark on the growth of radish seedlings. To pare the number of possible durations down to a manageable level, the students decided to focus the question on three different durations: 24 hours of light, 12 hours of light and 12 hours of darkness, and 24 hours of darkness. Plastic bags are to be used as growth chambers; there are 120 radish seeds available for the study.

(a) Is the best design for this study a sample survey, an experiment, or an observational study? Explain your reasoning.
(b) Describe how you would design a study to compare the three duration schemes, using all 120 seeds and as many plastic bags as you need.

16. **Core Concept D, Core Skill 1.**

Students in a high school mathematics class decided that their term project would be a study of the strictness of the parents or guardians of students in the school. Their goal was to estimate the proportion of students in the school who thought of their parents or guardians as "strict". They do not have time to interview all 1000 students in the school, so they plan to obtain data from a sample of students.

(a) Is the best design for this study a sample survey, an experiment, or an observational study? Explain your reasoning.
(b) The students quickly realized that, as there is no definition of "strict", they could not simply ask a student, "Are your parents or guardians strict?" Write three questions that could provide objective data related to strictness.
(c) Describe an appropriate method for obtaining a sample of 100 students, based on your answer in part (a) above.

17. **Core Skill 1, Core Skill 2.**

The data in the accompanying table shows the fate of 1316 passengers on the Titanic described in terms of two categorical variables, class of travel and survival. Use these data to answer the questions posed below.

	Class of Travel			
Survived	First	Second	Third	Total
Yes	203	118	178	499
No	122	167	528	817
Total	325	285	706	1316

(a) Do these data come from a sample survey, an experiment or an observational study? Explain your reasoning.
(b) What proportion of the passengers survived? What proportion of the passengers traveled in first class?
(c) Construct a table of (conditional) relative frequencies by column. Interpret the results in context and use them to discuss the association between class of travel and survival.
(d) Construct a table of (conditional) relative frequencies by row. Do these result in a similar interpretation with regard to association as that in part (c)?

18. **Core Skill 1, Core Skill 2, Core Skill 3.**

A simple random sample of 100 high school seniors was selected from a large school district. The gender of each student was recorded, and each student was asked the following questions.

- Have you ever had a part-time job?
- If you answered yes to the previous question, was your part-time job in the summer only?

The responses are summarized in the table below.

	Gender		
Job Experience	Male	Female	Total
Never had a part-time job	21	31	52
Had a part-time job during summer only	15	13	28
Had a part-time job but not only during summer	12	8	20
Total	48	52	100

(a) Construct a graphical display that shows the relationship between gender and job experience for the students in the sample.
(b) Write a few sentences summarizing what the display in part (a) reveals about the relationship between gender and job experience for the students in the sample.
(c) Is it appropriate to use these data to construct an estimate of the proportion of seniors in the school district who never had a part-time job? Why or why not?

19. **Core Skill 1, Core Skill 3.**

The 54 students in a middle school class were asked two questions about musical preferences: "Do you like rock?" "Do you like rap?" The responses are summarized in the table below.

(a) Is this a sample survey, an experiment, or an observational study?
(b) What percentage of the students in the class like rock?
(c) Does there appear to be a positive association between liking rock and liking rap for this class (i.e., do the students who like rock also tend to like rap)? Justify your answer by pointing out a feature of the table that supports it.
(d) Do you think the results for this class would generalize to the entire middle school? To a high school class in a nearby school? Explain your reasoning.

	Like Rap		
Like Rock	Yes	No	Row Totals
Yes	27	6	33
No	4	17	21
Column Totals	31	23	54

20. **Core Skill 1, Core Skill 5.**

What are the consequences of delayed defibrillation for those who have cardiac arrest? In a study of 6789 patients, at 369 hospitals, who had experienced cardiac arrest, 2045 had to wait longer than the recommended two minute maximum for defibrillation. Among those receiving delayed defibrillation, 22.2% survived to hospital discharge. Among those whose defibrillation was not delayed, 39.3% survived to discharge. The study concluded that, "Delayed defibrillation is common and is associated with lower rates of survival after in-hospital cardiac arrest."

(a) Is this study a sample survey, an experiment or an observational study?

(b) Note the use of the phrase "is associated with" in the study conclusion. Would it be correct to replace this phrase with "causes"? Why or why not?

21. **Core Skill 2, Core Skill 3.**

Two gasoline additives were tested to check their claims that their use will increase gasoline mileage in cars. Thirty cars were randomly selected and each was filled with gasoline. The cars were run until the gas tanks were empty. The distance traveled was recorded for each car.

Additive A was randomly assigned to 15 of the cars and the remaining 15 cars got additive B. The cars were again run under the same driving conditions until the tanks were empty and the miles driven was recorded. For each car the difference in miles driven was calculated as miles with additive minus miles without the additive. If that number was greater than zero it meant that the car went a greater distance with the additive than without it. Negative differences meant that the car went a greater distance without the additive than with it.

The following table summarizes the calculated differences.

Additive	Values Below Q1	Q1	Median	Q3	Values Above Q3
A	-10, -8, -2	1	3	4	5, 7, 9
B	-5, -3, -3	-2	1	25	35, 37, 40

(a) On the grid below, display parallel boxplots (showing outliers, if any) of the differences for the two additives. Make sure that you label the plots so that we can tell which one is A and which is B.

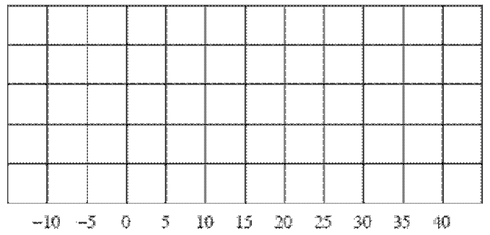


Figure 15

(b) Two ways that the effectiveness of a gasoline additive can be evaluated are by looking at

- The proportion of cars that have increased gas mileage when the additive is used in those cars
- The average mean increase in gas mileage when the additive is used in those cars.

(i) Which additive, A or B, would you recommend if the goal is to increase gas mileage in the highest proportion of cars? Explain your answer.

(ii) Which additive, A or B, would you recommend if the goal is to have the highest average (mean) increase in gas mileage? Explain your answer.

22. **Core Skill 3.**

The accompanying graph shows the relationship between scores on Exam 1 and scores on Exam 2 for all the students studying statistics from the same teacher in a recent year. The darker line (with slope 1) is the $y = x$ line. The lighter line (slope 0.6) is the least squares line of best fit.

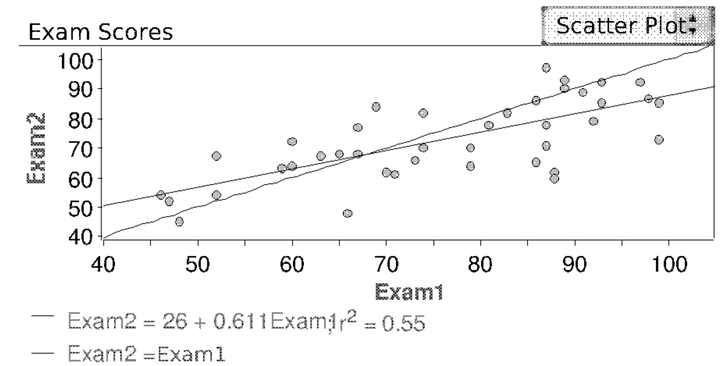


Figure 16

(a) What does the pattern tell you about the students who scored 60 or below on the first exam? What does the pattern tell you about the students who scored 80 or above on the first exam?

(b) Did more students improve their score or lower their score as they moved from exam 1 to exam 2? What feature of the plot leads to you answer of this question?

(c) Make a concise statement as to why the slope of the least squares line is less than 1.

23. **Core Skill 3.**

Gas chromatography is a technique used to detect very small amounts of a substance. To study the calibration of a gas chromatograph, five measurements were taken for each of four specimens containing different but known amounts of the substance being studied. A graph of the output readings from the gas chromatograph versus the input amounts is shown on the accompanying plot.[4]

(a) Based on just the scatter plot and the regression line, does the simple linear model appear to provide a good description of the performance of the chromatograph?

(b) On studying the residual plot, what concerns might you have about the simple linear regression line as a model for the performance of the chromatograph? (Residuals are deviations of the points from the regression line.)

[4]Source: http://lib.stat.cmu.edu/DASL/Datafiles/Chromatography.html

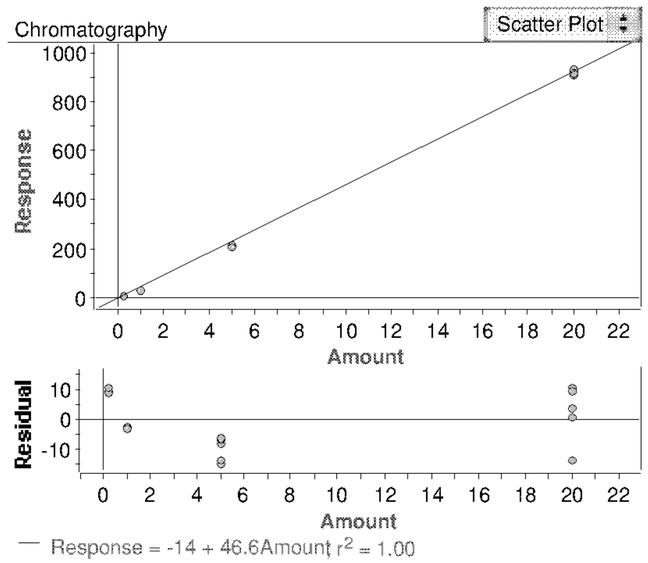


Figure 17

24. **Core Skill 3.**

Which of the following data sets are not good candidates to be modeled by a normal distribution? Explain your reasoning in each case.

(a) Salaries of employees of a large corporation.
(b) The life lengths of batteries of a specific brand used in laptop computers.
(c) Measurements of the diameters of 15-inch wheels produced by an automobile manufacturer.
(d) Prices of single-family houses in your city or county.

25. **Core Skill 3, Core Skill 4.**

Each of the simulated distributions generated above can be modeled by a normal distribution with center at the fixed population proportion, p, used to generate the distribution and standard deviation (SD) of approximately 0.05. From properties of the normal distribution it can be seen that about 95% of the possible values of a sample proportion lie within approximately 2SD of their mean (p).

(a) Letting p denote a population proportion and an observed sample proportion, argue that any population with a value of p greater than $p + 2\text{SD}$ would not produce the observed within its middle 95% of possible outcomes. (In the context of Block Scheduling, and using an arbitrary but common definition of plausible, any value of p greater than $0.45+0.10 = 0.55$ would not be a plausible value for the population proportion of students favoring the block scheduling plan.)
(b) Letting p denote a population proportion and an observed sample proportion, argue that any population with a value of p less than $p - 2\text{SD}$ would not produce the observed within its middle 95% of possible outcomes. (In the context of Block Scheduling, any value of p less than $0.45 - 0.10 = 0.35$ would not be a plausible value for the population proportion of students favoring the block scheduling plan.)
(c) Based on parts (a) and (b), argue that the interval

$$p \pm 2\text{SD}$$

forms an interval of plausible values for the true population proportion. That is, the interval $p \pm 2\text{SD}$ contains about 95% of the possible values of the sample proportions that can be generated from a population with true proportion p. This 2SD bound is commonly referred to as the margin of error.

(d) In general, will the margin of error increase or decrease as the sample size increases? Explain your reasoning.

26. **Core Skill 5.**

Researchers have noticed that the number of golf courses and the number of divorces in the United States are strongly correlated and both have been increasing over the last several decades. Can you conclude that the increasing number of golf courses is causing the number of divorces to increase? Explain your answer.

27. **Core Skill 5.**

The following appeared in the Sunday Times of London:

> Research finds the website [Facebook] is damaging students' academic performance. . . . Facebook users . . . are more likely to perform poorly in exams, according to new research. . . . The majority of students who use Facebook every day are underachieving by as much as an entire grade compared with those who shun the site.

This story was then picked up by many other newspapers and became a popular headline across the United States and beyond.

(a) What elements of the story in the Times sound like cause-and-effect arguments?

The source of the data in this case was the report of a study at the Ohio State University entitled, "A Description of Facebook Use and Academic Performance Among Undergraduate and Graduate Students." A total of 219 participants, mostly from selected classes in the school of education whose instructors agreed to participate, constituted the sample of this pilot study. The sample included both graduate and undergraduate students, with self-reported data on both how much they studied and grade point averages. The data were reported in ranges, like 3.0 to 3.5 for grade point averages. [5]

(b) Many of the weaknesses of the study were reported by the authors. What do you think some of these weaknesses are?
(c) Was the Sunday Times correct in reporting the results in cause-and-effect style? Explain your reasoning.

28. **Core Skill 5.**

A presidential campaign advertisement for former New York City mayor Rudy Giuliani said, "I had prostate cancer, 5, 6 years ago. My chance of surviving prostate cancer-and thank God, I was cured of it-in the United States was eighty-two percent. My chance of surviving prostate cancer in England was only 44 percent under socialized medicine."

The quoted percentages were based on 5-year survival rates, not mortality rates, reported from studies in the United States and the United Kingdom, respectively. But, these 5-year survival rates have little to do with mortality rates, as can be seen from the definitions given below:

$$\text{5-year survival rate} = \frac{\text{number of patients diagnosed with cancer still alive 5 years after diagnosis}}{\text{number of patients diagnosed with cancer}}$$

$$\text{annual mortality rate} = \frac{\text{number of people who died from cancer over 1 year}}{\text{number of people in the group}}$$

(a) How could changes in medical practice increase the 5-year survival rates without changing the mortality rate for any given year?

[5] Source:http://online.wsj.com/article/SB124034974305240495.html

(b) In the US, most prostate cancer is detected by screening for prostate-specific antigens (PSA). In the UK, most prostate cancer is detected by symptoms. How might this difference in medical practice affect their respective 5-year survival rates?
(c) Was Mr. Giuliani making a fair comparison? Explain your reasoning.

29. **Core Skill 5.**

"Parents Rate Schools Much Higher Than Do Americans Overall" is the title of a report on a Gallup poll of August 24, 2009. The results of the poll show that "three in four American parents (76%) are satisfied with the education their children receive in school, compared to 45% of the general public who are satisfied with the state of schools nationwide." An explanation of how the poll was conducted includes the following.

> Results are based on telephone interviews with 1,010 national adults, aged 18 and older, conducted Aug. 6-9, 2009. For results based on the total sample of national adults, one can say with 95% confidence that the margin of error is ±4 percentage points. For results based on the sample of 233 parents with children in kindergarten through grade 12, the maximum margin of sampling error is ±8 percentage points.
>
> Interviews are conducted with respondents on land-line telephones (for respondents with a land-line telephone) and cellular phones (for respondents who are cell-phone only).
>
> In addition to sampling error, question wording and practical difficulties in conducting surveys can introduce error or bias into the findings of public opinion polls.

(a) Explain the meaning of the 4% margin of error in the context of this poll.
(b) Why is the margin of error for the poll of parents with children in school larger than that for the overall poll?
(c) Why is it important to mention both cellular and land-line phones?
(d) Other than error due to the fact the data comes from a sample, describe other potential sources of error in a poll of this nature.

30. **Core Skill 5.**

In 1962, research statistics showed that the percentage of obesity in America's population was at 13%. By 1980 it has risen to 15%, by 1994 to 23%, and by the year 2000 the obesity progression in America had reached an unprecedented 31%. The U.S. Surgeon General report declared that obesity is responsible for 300,000 deaths every year. These overwhelming research statistics reveal an alarming obesity trend, the need for diagnosis, and a call to action.

In the midst of an informational and research feeding frenzy on the obesity epidemic, statistics are easy to come by. The most widely disseminated CDC research statistics on American obesity tell us that 63% of adult Americans have a Body Mass Index (BMI) in excess of 25.0 and are therefore overweight; more than a quarter surpass 30.0, having been declared obese. And perhaps the most riveting statistics concern obesity in kids: research shows that childhood obesity has more than tripled over the past two decades.

Still, by focusing on the polite abstraction of Body Mass Index rather than actual bodyweight, the CDC has hindered the war on the prevention of obesity in America. Indeed, CDC research epidemiologists are faithful keepers of the public health record; but for reasons of technical precision and political propriety, they have scrupulously avoided the publication of the most crucial and powerful obesity statistics, raw bodyweight averages for the American population.

The new IHRSA/ASD Obesity/Weight Control Report has published these graphic and visceral images of a dangerously overweight population. The "real" research statistics on obesity reveal that:

- 3.8 million Americans carry over 300 pounds.
- With the average adult woman weighing in at a staggering 163!

Perhaps the most shocking statistics underscoring obesity in the United States is that 400,000 Americans

(mostly men) fall into a super-massive 400+ pound category.[6]

(a) Explain the controversy between the two measures of obesity, the BMI (which takes into account height and weight) and bodyweight averages.
(b) The percentages in the first paragraph are based on BMI. Is there any other data on the article to which these figures can be compared fairly?
(c) Does the article make a strong scientific case for using bodyweight rather than BMI to measure obesity?

Sources

1. Scheaffer, Richard
2. Adapted from AP Statistics 2001 No 1
3. Charles A. Dana Center and Achieve, Inc. (2007). Secondary Assessments and Tasks. *Mathematics Benchmarks, Grades K–12.* Austin: Authors. Online at `www.utdanacenter.org/k12mathbenchmarks`.
4. Adapted from Achieve Benchmarks revision
5. Adapted from Achieve Benchmarks revision
6. Adapted from AP Statistics 1998 No 1
7. Adapted from AP Statistics 2008 No 1
8. Adapted from AP Statistics 2000 No 1
9. Adapted from Achieve Benchmarks revision
10. Adapted from Achieve Benchmarks revision
11. Adapted from Achieve Benchmarks revision
12. Adapted from Achieve Benchmarks revision
13. Adapted from Achieve Benchmarks revision
14. Adapted from Achieve Benchmarks revision
15. Adapted from Guidelines for Assessment and Instruction in Statistics Education (GAISE)
16. Adapted by Richard Scheaffer from Mathematics Teacher
17. Adapted from Achieve Benchmarks revision
18. Adapted from AP Statistics 2009 No 1
19. Adapted from Guidelines for Assessment and Instruction in Statistics Education (GAISE)
20. Chan, P. S. et. al. (2008), Delayed Time to Defibrillation after In-Hospital Cardiac Arrest, *The New England Journal of Medicine*, 358, 1, 9-17.
21. Adapted from AP Statistics 2004 No 1
22. Scheaffer, Richard
23. Adapted from Achieve Benchmarks revision
24. Adapted from Achieve Benchmarks revision
25. Adapted from Achieve Benchmarks revision
26. Adapted from Achieve Benchmarks revision
27. Sunday Times of London
28. Gigerenzer, G, et.al. (2008), Helping Doctors and Patients Make Sense of Health Statistics, *Psychological Science in the Public Interest*, 8, 2, 53-96.

[6] Source:http://www.americansportsdata.com/obesityresearch.asp

29. Scheaffer, Richard
30. Statistics_ADP

Evidence for Individual Math Standards

What follows is a sample of sources consulted in the drafting of the core math standards. Citations are organized by the standard to which they pertain. For example, all sources with specific relevance to standard #2 (Number) are listed below that standard. Each citation contains a link to the section of the source document that is relevant to the core math standard to which it corresponds. For more information on sources and how they were used in the drafting of the math standards, please refer to the "College and Career Readiness Standards for Mathematics."

1. Mathematical Practice

2. Number

National Reports

- *NAEP Math Framework 2009* – Number Properties and Operations Strand (p. 7-8 description, standards follow)
- AMATYC, *Crossroads* - Standard C-1 Number Sense
- NCTM, *Focal Points* - Number and Operations Focal Points
- NCTM *Principles and Standards* - Number and Operations Standard

College Readiness

- ACT *College Readiness Standards* - Basic Operations and Applications; Numbers: Concepts & Properties
- *Advanced Placement Computer Science*, Statistics and Computer Science Course Descriptions - Computer Science Prerequisite (p.7)
- Conley, D.T. (2008). *Knowledge and Skills for University Success* - Computation Strand (p.31-32), Mathematical Reasoning (p. 35-37)
- *College Board Standards for College Success*: Mathematics and Statistics. College Board, (2006) - Middle School Math Standards p.iii
- *Ready or Not: Creating a High School Diploma That Counts*. American Diploma Project, (2004) - Number sense and Numerical Operations Strand

Illustrative International Benchmarks

- **Alberta** - General Outcomes - Number Strand p. 3
- **Belgium** - 2 Number theory and algebra strand
- **China** - Numbers and Algebra strand
- **Chinese Taipei** - 1. Numbers and Coordinate system, pgs. 31-32
- **England** - Number and Algebra
- **Hong Kong** - Number and Algebra Dimension
- **India** - Number Systems Unit, Grade 9
- **Ireland** – Leaving Certificate - Arithmetic
- **Japan** - Math I course
- **Korea** - Strand A Numbers and Operations
- **Singapore** - Topic 1 Numbers and Algebra
- Program for International Student Assessment (PISA), (2006) - Quantity Overarching Idea (p. 89-92)
- Trends in International Mathematics and Science Study (TIMSS), (2007) - Number
- International Baccalaureate, Mathematics Standard Level, (2006) - Prior Knowledge (Number and Algebra)

Evidence for Individual Math Standards

- EdExcel, General Certificate of Secondary Education, Mathematics, (2009) - Number and Algebra

Illustrative Alignment with State and Other Standards

- **California** - State Standards - Algebra I
- **Florida** - State Standards – Algebra
- **Georgia** - State Standards - Number and Operations (throughout)
- **Massachusetts** - State Standards - Number Sense and Operations
- **Minnesota** - State Standards - Algebra Strand

3. Quantity

National Reports

- *NAEP Math Framework 2009* – Measurement Strand (p. 13-14 description, standards follow. Strand called "Geometry and Measurement" in grade 12)
- AMATYC, *Crossroads* - Standard C-3: Geometry
- NCTM, *Focal Points* - Number and Operations and Measurement Focal Points
- NCTM *Principles and Standards* - Measurement Standard

College Readiness

- ACT *College Readiness Standards* - Numbers: Concepts & Properties; Measurement
- Conley, D.T. (2008). *Knowledge and Skills for University Success* - General Foundation Skills (Natural Science Standards) (p.44)
- *Ready or Not: Creating a High School Diploma That Counts.* American Diploma Project, (2004) - Number sense and Numerical Operations

Illustrative International Benchmarks

- **Alberta** - General Outcomes - Number Strand
- **China** - Numbers and Algebra ; Space and Figures Strands
- **England** - Geometry and Measures Strand
- **Hong Kong** - Measures, Shape and Space Dimension
- **Singapore** - Topic 1 Numbers and Algebra; Topic 2 Geometry and Measurement
- Program for International Student Assessment (PISA), (2006) - Quantity Overarching Idea
- Trends in International Mathematics and Science Study (TIMSS), (2007) - Number
- International Baccalaureate, Mathematics Standard Level, (2006) - Prior Knowledge (Number and Algebra), pgs. 2-3
- EdExcel, General Certificate of Secondary Education, Mathematics, (2009) - Shape, space and measures

Illustrative Alignment with State and Other Standards

- **California** - State Standards - Throughout Measurement and Geometry strand in K-7 (e.g. p. 32)
- **Florida** - State Standards – Algebra; Financial Literacy
- **Massachusetts** - State Standards - Measurement
- **Minnesota** - State Standards - Geometry and Measurement Strand

4. Expressions

Evidence for Individual Math Standards

National Reports

- *NAEP Math Framework 2009* – Number Properties and Operations Strand (p. 7-8 description, standards follow); Algebra Strand (p. 30-31 description, standards follow)
- AMATYC, *Crossroads* - Standard C-2: Symbolism and Algebra
- NCTM, *Focal Points* - Number and Operations and Algebra Focal Points
- NCTM *Principles and Standards* - Number and Operations Standard; Algebra Standard

College Readiness

- ACT *College Readiness Standards* - Expressions, Equations & Inequalities
- *Advanced Placement Calculus*, Statistics and Computer Science Course Descriptions - Calculus Prerequisite (p.6); Statistics Prerequisite (p.6); Computer Science Prerequisite (p.7)
- Conley, D.T. (2008). *Knowledge and Skills for University Success* - Computation Strand (p.31-32); Algebra Strand (p32-34)
- *College Board Standards for College Success*: Mathematics and Statistics. College Board, (2006) - Algebra I Standards (p.v); Algebra II Standards (p.vii)
- *Ready or Not: Creating a High School Diploma That Counts*. American Diploma Project, (2004) - Algebra Strand

Illustrative International Benchmarks

- **Alberta** - General Outcomes - Patterns and Relations Strand
- **Belgium** - 2 Number theory and algebra Strand
- **China** - Numbers and Algebra strand
- **Chinese Taipei** - 3. Polynomials, pgs. 32-33
- **England** - Number and Algebra
- **Finland** - MAB1 Expressions and equations
- **Hong Kong** - Number and Algebra Dimension
- **India** - Algebra Unit, Grade 10
- **Ireland** – Leaving Certificate - Algebra
- **Japan** - Math I course p. 59
- **Korea** - Strand B Variables and Expressions
- **Singapore** - Topic 1 Numbers and Algebra
- Trends in International Mathematics and Science Study (TIMSS), (2007) - Algebra
- International Baccalaureate, Mathematics Standard Level, (2006) - Prior Knowledge (Number and Algebra)
- EdExcel, General Certificate of Secondary Education, Mathematics, (2009) - Number and Algebra

Illustrative Alignment with State and Other Standards

- **California** - State Standards - Algebra I; Algebra II
- **Florida** - State Standards – Algebra
- **Georgia** - State Standards –Mathematics 3, Algebra
- **Massachusetts** - State Standards - Patterns, Relations and Algebra
- **Minnesota** - State Standards - Algebra Strand

5. Equations

National Reports

Evidence for Individual Math Standards

- *NAEP Math Framework 2009* – Number Properties and Operations Strand (p. 7-8 description, standards follow); Algebra Strand (p. 30-31 description, standards follow)
- AMATYC, *Crossroads* - Standard C-2: Symbolism and Algebra
- NCTM, *Focal Points* - Number and Operations and Algebra Focal Points
- NCTM *Principles and Standards* - Number and Operations Standard; Algebra Standard

College Readiness

- ACT *College Readiness Standards* - Expressions, Equations & Inequalities
- *Advanced Placement Calculus*, Statistics and Computer Science Course Descriptions - Calculus Prerequisite (p.6); Statistics Prerequisite (p.6); Computer Science Prerequisite (p.7)
- Conley, D.T. (2008). *Knowledge and Skills for University Success* - Computation Strand (p.31-32); Algebra Strand (p32-34)
- *College Board Standards for College Success*: Mathematics and Statistics. College Board, (2006) - Algebra I Standards (p.v); Algebra II Standards (p.vii)
- *Ready or Not: Creating a High School Diploma That Counts*. American Diploma Project, (2004) - Algebra Strand

Illustrative International Benchmarks

- **Alberta** - General Outcomes – Patterns and Relations Strand
- **Belgium** - 2 Number theory and algebra Strand
- **China** - Numbers and Algebra strand
- **Chinese Taipei** - 3. Polynomials, pgs. 32-33
- **England** - Number and Algebra
- **Finland** - MAB1 Expressions and equations
- **Hong Kong** - Number and Algebra Dimension
- **India** - Algebra Unit
- **Ireland** – Leaving Certificate - Algebra
- **Japan** – Math I course; Math II course
- **Korea** - Strand B Variables and Expressions
- **Singapore** - Topic 1 Numbers and Algebra
- Program for International Student Assessment (PISA), (2006) - Change and Relationships Overarching Idea (p. 86-89)
- Trends in International Mathematics and Science Study (TIMSS), (2007) - Algebra
- International Baccalaureate, Mathematics Standard Level, (2006) - Functions and Equations, pgs. 4-5; Prior Knowledge (Number and Algebra), pgs. 2-3
- EdExcel, General Certificate of Secondary Education, Mathematics, (2009) - Number and Algebra

Illustrative Alignment with State and Other Standards

- **California** - State Standards - Algebra I; Algebra II
- **Florida** - State Standards – Algebra
- **Georgia** - State Standards – Mathematics 3, Algebra
- **Massachusetts** - State Standards - Patterns, Relations and Algebra
- **Minnesota** - State Standards - Algebra Strand

6. Functions

National Reports

Evidence for Individual Math Standards

- NAEP *Math Framework 2009* – Number Properties and Operations Strand (p. 7-8 description, standards follow); Algebra Strand (p. 30-31 description, standards follow)
- AMATYC, *Crossroads* - Standard C-4: Function
- NCTM, *Focal Points* - Algebra Focal Points
- NCTM *Principles and Standards* - Algebra Standard

College Readiness

- ACT *College Readiness Standards* – Functions
- *Advanced Placement Calculus*, Statistics and Computer Science Course Descriptions - Calculus Prerequisite (p.6); Statistics Prerequisite (p.6); Computer Science Prerequisite (p.7)
- Conley, D.T. (2008). *Knowledge and Skills for University Success* - Algebra Strand (p32-34)
- *College Board Standards for College Success*: Mathematics and Statistics. College Board, (2006) - Algebra II Standards (p.vii)
- *Ready or Not: Creating a High School Diploma That Counts*. American Diploma Project, (2004) - Algebra Strand

Illustrative International Benchmarks

- **Alberta** - General Outcomes - Patterns and Relations Strand
- **Belgium** - 3 Real functions
- **China** - Numbers and Algebra strand
- **Chinese Taipei** - 4. Exponent and logarithm; 5. The basic concept of trigonometric functions, pgs. 33-34
- **England** - Number and Algebra
- **Finland** - MAB3 Mathematical Models 1; MAB4 Mathematical analysis; MAB6 Mathematical Models II
- **Hong Kong** - Number and Algebra Dimension
- **India** - Sets and Function, Grade 11
- **Ireland** – Leaving Certficate, Functions and Calculus
- **Japan** - Math I course; Math II course
- **Korea** - Strand D Functions
- **Singapore** - Topic 1 Numbers and Algebra
- Program for International Student Assessment (PISA), (2006) - Change and Relationships Overarching Idea
- Trends in International Mathematics and Science Study (TIMSS), (2007) - Algebra
- International Baccalaureate, Mathematics Standard Level, (2006) - Functions and Equations, pgs. 4-5
- EdExcel, General Certificate of Secondary Education, Mathematics, (2009) - Number and Algebra

Illustrative Alignment with State and Other Standards

- **California** - State Standards - Algebra II
- **Florida** - State Standards – Algebra
- **Georgia** - State Standards – Mathematics 3, Algebra
- **Massachusetts** - State Standards - Patterns, Relations and Algebra
- **Minnesota** - State Standards - Algebra Strand

7. Modeling

National Reports

Evidence for Individual Math Standards

- NAEP *Math Framework 2009* - Algebra Strand (p. 30-31 description, standards follow)
- AMATYC, *Crossroads* - Standard C-4: Function
- NCTM, *Focal Points* - Algebra Focal Points
- NCTM Principles and Standards - Algebra Standard

College Readiness

- ACT *College Readiness Standards* - Expressions, Equations & Inequalities
- *Advanced Placement Calculus,* Calculus Course Descriptions - Calculus Prerequisite (p.6)
- Conley, D.T. (2008). *Knowledge and Skills for University Success* - Algebra Strand (p32-34)
- *College Board Standards for College Success*: Mathematics and Statistics. College Board, (2006) - Algebra II (p.vii)
- *Ready or Not: Creating a High School Diploma That Counts*. American Diploma Project, (2004) - Algebra Strand

Illustrative International Benchmarks

- **Alberta** - General Outcomes - Patterns and Relations Strand
- **China** - Numbers and Algebra Strand
- **England** - Number and Algebra
- **Finland** - MAB3 Mathematical Models 1; MAB6 Mathematical Models II
- **India** - Mathematical Modeling
- **Singapore** - Topic 1 Numbers and Algebra
- Program for International Student Assessment (PISA), (2006) - Change and Relationships Overarching Idea (p. 86-89)
- Trends in International Mathematics and Science Study (TIMSS), (2007) - Algebra
- EdExcel, General Certificate of Secondary Education, Mathematics, (2009) - Number and Algebra

Illustrative Alignment with State and Other Standards

- **California** - State Standards - Algebra I
- **Florida** - State Standards - Algebra
- **Georgia** - State Standards - Mathematics 3, Algebra
- **Massachusetts** - State Standards - Patterns, Relations and Algebra
- **Minnesota** - State Standards - Algebra Strand

8. Shape

National Reports

- *NAEP Math Framework 2009* – Geometry Strand (p. 17-19 description, standards follow. Strand called "Geometry and Measurement" in grade 12)
- AMATYC, *Crossroads* - Standard C-3: Geometry
- NCTM, *Focal Points* - Geometry and Measurement Focal Points
- NCTM *Principles and Standards* - Geometry Standard

College Readiness

- ACT *College Readiness Standards* - Properties of Plane Figures; Measurement
- *Advanced Placement Calculus,* Calculus Course Descriptions - Calculus Prerequisite (p.6)
- Conley, D.T. (2008). *Knowledge and Skills for University Success* - Geometry (p.34-35)

Evidence for Individual Math Standards

- *College Board Standards for College Success:* Mathematics and Statistics. College Board, (2006) - Geometry Standards (p. vi)
- *Ready or Not: Creating a High School Diploma That Counts.* American Diploma Project, (2004) - Geometry Strand

Illustrative International Benchmarks

- **Alberta** - General Outcomes - Shape and Space Strand
- **Belgium** - 4 Geometry
- **China** - Mathematics 2; Space and Figures Strand
- **Chinese Taipei** – 6. Characters and application of trigonometric (sic), pg. 34; 2. Straight line and plane of space; 4. Conic section, pgs. 35-36
- **England** - Geometry and Measures Strand
- **Finland** - MAB2 Geometry
- **Hong Kong** - Measures, Shape and Space Dimension
- **India** - Geometry Unit
- **Ireland** - Geometry
- **Japan** - Math II Course; Math A Course
- **Korea** - Strand C Geometry
- **Singapore** - Topic 2 Geometry and Measurement (starting on page 7)
- Program for International Student Assessment (PISA), (2006) - Space and Shape Overarching Idea (p.83-86)
- Trends in International Mathematics and Science Study (TIMSS), (2007) - Geometry
- International Baccalaureate, Mathematics Standard Level, (2006) - Prior Knowledge (Geometry), pgs. 3
- EdExcel, General Certificate of Secondary Education, Mathematics, (2009) - Shape, space and measures

Illustrative Alignment with State and Other Standards

- **California** - State Standards – Geometry
- **Florida** - State Standards – Geometry
- **Georgia** - State Standards -Mathematics 2, Geometry
- **Massachusetts** - State Standards - Geometry
- **Minnesota** - State Standards - Geometry and Measurement Strand

9. Coordinates

National Reports

- *NAEP Math Framework 2009* – Geometry Strand (p. 17-19 description, standards follow. Strand called "Geometry and Measurement" in grade 12)
- AMATYC, *Crossroads* - Standard C-3: Geometry
- NCTM, *Focal Points* - Geometry and Measurement Focal Points
- NCTM *Principles and Standards* - Geometry Standard

College Readiness

- ACT *College Readiness Standards* - Graphical Representations
- *Advanced Placement Calculus,* Calculus Course Descriptions - Calculus Prerequisite (p.6)
- Conley, D.T. (2008). *Knowledge and Skills for University Success* - Geometry (p.34-35)

Evidence for Individual Math Standards

- College Board Standards for College Success: Mathematics and Statistics. College Board, (2006) - Algebra I Standards (p.v); Algebra II Standards (p.vii)
- Ready or Not: Creating a High School Diploma That Counts. American Diploma Project, (2004) - Geometry Strand

Illustrative International Benchmarks

- **Alberta** - General Outcomes - Shape and Space Strand
- **Belgium** - 4 Geometry
- **China** - Mathematics 2; Space and Figures Strand
- **Chinese Taipei** – First Year, 1. Numbers and Coordinate system, pgs. 31-32; Second Year, 1. Vector, pg. 35
- **England** - Geometry and Measures Strand ; Number and Algebra
- **Finland** - MAB2 Geometry
- **Hong Kong** - Measures, Shape and Space Dimension
- **India** - Geometry and Mensuration Units
- **Ireland** - Coordinate Geometry
- **Japan** – Math II Course; Math B Course
- **Korea** - Strand C Geometry
- **Singapore** - Topic 2 Geometry and Measurement
- Program for International Student Assessment (PISA), (2006) - Space and Shape Overarching Idea; Change and Relationships Overarching Idea
- Trends in International Mathematics and Science Study (TIMSS), (2007) - Algebra; Geometry
- International Baccalaureate, Mathematics Standard Level, (2006) - Prior Knowledge (Number and Algebra, and Geometry), pgs. 2-3
- EdExcel, General Certificate of Secondary Education, Mathematics, (2009) - Number and Algebra; Geometry

Illustrative Alignment with State and Other Standards

- **California** - State Standards - Algebra I; Geometry
- **Florida** - State Standards – Algebra
- **Georgia** - State Standards - Geometry
- **Massachusetts** - State Standards - Geometry
- **Minnesota** - State Standards - Geometry and Measurement Strand

10. Probability

National Reports

- *NAEP Math Framework 2009* – Data Analysis, Statistics and Probability Strand (p. 24-25 description, standards follow)
- AMATYC, *Crossroads* - Standard C-5: Discrete Mathematics, Standard C-6: Probability and Statistics
- NCTM *Principles and Standards* - Data Analysis & Probability Standard

College Readiness

- ACT College Readiness Standards - Probability, Statistics & Data Analysis [link to ACT_CollegeReadinessStandards_p10-17.pdf]
- Conley, D.T. (2008). *Knowledge and Skills for University Success* - Research & Analysis (Social Science Standards), section B (p.64)

Evidence for Individual Math Standards

- *College Board Standards for College Success*: Mathematics and Statistics. College Board, (2006) - Geometry Standards (p. vi); Algebra II Standards (p. vii)
- *Ready or Not: Creating a High School Diploma That Counts*. American Diploma Project, (2004) - Data Interpretation, Statistics and Probability Strand

Illustrative International Benchmarks

- **Alberta** - General Outcomes - Statistics and Probability Strand
- **Belgium** - 5 Statistics
- **China** - Mathematics 3; Statistics and Probability Strand
- **Chinese Taipei** – Second Year, 5 Permutation and Combination, p. 37
- **England** - Statistics Strand
- **Finland** - MAB5 Statistics and Probability
- **Hong Kong** - Data Handling Dimension
- **India** - Statistics and Probability Unit, Grade 11
- **Ireland** Discrete Mathematics and Counting
- **Japan** - Math A Course; Math C Course
- **Korea** - Strand E Probability and Statistics
- **Singapore** - Topic 3 Statistics and Probability
- Program for International Student Assessment (PISA), (2006) - Uncertainty Overarching Idea
- Trends in International Mathematics and Science Study (TIMSS), (2007) - Data and Chance
- International Baccalaureate, Mathematics Standard Level, (2006) - Statistics and Probability, pgs. 6-8
- EdExcel, General Certificate of Secondary Education, Mathematics, (2009) - Handling Data

Illustrative Alignment with State and Other Standards

- **California** - State Standards - Algebra II; Probability and Statistics
- **Florida** - State Standards – Probability
- **Georgia** - State Standards – Mathematics 3, Data Analysis and Probability
- **Massachusetts** - State Standards - Data Analysis, Statistics, and Probability
- **Minnesota** - State Standards - Data Analysis & Probability

11. Statistics

National Reports

- NAEP *Math Framework 2009* – Data Analysis, Statistics and Probability Strand (p. 24-25 description, standards follow)
- AMATYC, *Crossroads* - Standard C-6: Probability and Statistics
- NCTM, *Focal Points* - Data Analysis Focal Points
- NCTM Principles and Standards - Data Analysis & Probability Standard

College Readiness

- ACT *College Readiness Standards* - Probability, Statistics & Data Analysis
- Conley, D.T. (2008). *Knowledge and Skills for University Success* - Statistics (p.37)
- *College Board Standards for College Success*: Mathematics and Statistics. College Board, (2006) - Middle School Math Standards (p.iii); Algebra I Standards (p.v); Precalculus Standards (p.viii)
- *Ready or Not: Creating a High School Diploma That Counts*. American Diploma Project, (2004) - Data Interpretation, Statistics and Probability Strand

Evidence for Individual Math Standards

Illustrative International Benchmarks

- **Alberta** - General Outcomes - Statistics and Probability Strand
- **Belgium** - 5 Statistics
- **China** - Mathematics 3; Statistics and Probability Strand
- **Chinese Taipei** – Second Year, 6 Probability and Statistic, pg. 37-38
- **England** - Statistics Strand
- **Finland** - MAB5 Statistics and Probability
- **Hong Kong** - Data Handling Dimension
- **India** - Statistics and Probability Unit, Grade 11
- **Ireland** - Discrete Mathematics and Counting (p.27 and 28)
- **Japan** - Math B Course; Math C Course
- **Korea** - Strand E Probability and Statistics
- **Singapore** - Topic 3 Statistics and Probability
- Program for International Student Assessment (PISA), (2006) - Uncertainty Overarching Idea
- Trends in International Mathematics and Science Study (TIMSS), (2007) - Data and Chance
- International Baccalaureate, Mathematics Standard Level, (2006) - Statistics and Probability, pgs. 6-8
- EdExcel, General Certificate of Secondary Education, Mathematics, (2009) - Handling Data

Illustrative Alignment with State and Other Standards

- **California** - State Standards - Probability and Statistics
- **Florida** - State Standards – Statistics
- **Georgia** - State Standards - Mathematics 3, Data Analysis and Probability
- **Massachusetts** - State Standards - Data Analysis, Statistics, and Probability
- **Minnesota** - State Standards - Data Analysis & Probability

International Benchmarking and the Common Core

The Common Core State Standards (CCSS) are designed to be **college- and career-ready** and **internationally benchmarked**. To that end, the development process included the review and consideration of many sources, including research studies, existing standards from the U.S and abroad, and the professional judgment of teachers, content area experts, and college faculty. This paper will briefly describe how international benchmarking was used to develop the CCSS.

What documents were used to ensure that the CCSS were internationally benchmarked?

To ensure that the standards prepare students to be globally competitive, the development team used a number of sources, including: the frameworks for PISA and TIMSS; the International Baccalaureate syllabi; the American Institutes for Research report , *Informing Grades 1-6 Mathematics Standards Development: What Can Be Learned From High-Performing Hong Kong, Korea, and Singapore* and; the A+ Composite found in *A Coherent Curriculum: The Case for Mathematics* by Bill Schmidt, Richard Houang, and Leland Cogan.

In addition, the development team looked to the standards of a number of individual countries and provinces to inform the content, structure and language of the CCSS. In *mathematics*, twelve set of standards were selected to help guide the writing of the standards: Belgium, Canada [Alberta], China, Chinese Taipei, England, Finland, Hong Kong, India, Ireland, Japan, Korea, and Singapore.[i] In *English language arts*, the writing team looked closely at ten sets of standards from Australia (New South Wales and Victoria), Canada (Alberta, British Columbia, and Ontario), England, Finland, Hong Kong, Ireland, and Singapore.[ii]

How were the international benchmarks used to inform the development of the CCSS?

The goal of the international benchmarking in the common core state standards development process was to ensure that the CCSS are as rigorous as comparable standards in the high-performing and other countries. However, the use of international benchmarks as evidence is no easy feat; it is not simply a matter of identifying the "best" source and copying it, or of aggregating all viable sources to find some set of shared expectations. Rather, international benchmarks were used to guide critical decisions in the following areas:

- *Whether particular content should be included:* One of the principal ways international standards were used in this development process was as a guide when making tough decisions about whether content should be included or excluded.
- *When content should be introduced and how that content should progress*: The progression of topics in the international mathematics standards helped the development team make decisions about when to introduce topics in the CCSS as well as when to stop focusing on them.
- *Ensuring focus and coherence*: Standards from other countries tend to be very focused, including only what is absolutely necessary.

- *Organizing and formatting the standards*: Certain organizational aspects or characteristics of international standards that promoted clarity and ease of reading and use served as a model for the CCSS.
- *Determining emphasis on particular topics in standards*: Where emphasis on particular topics was found repeatedly in international standard, this was instructive in determining their importance for inclusion in the CCSS.

* * * * *

When the final version of the K-12 Common Core State Standards is released, it will be accompanied by a discussion of the evidence that was used in their development. In the meantime, the evidence from the September 2009 draft of the College and Career Ready Standards is available: The URL for the ELA document is http://www.corestandards.org/Files/ELAEvidence.pdf, and the URL for the mathematics document is http://www.corestandards.org/Files/MathEvidence.pdf.

[i] Eight of these were high-performers on either TIMSS, PISA or both: Belgium, Canada [Alberta], Chinese Taipei, Finland, Hong Kong, Japan, Korea, and Singapore. England and Ireland, which have uneven performances on international assessments, were included because of their cultural links to the United States. China and India were included because of their growing global competitiveness.

[ii] Differences in language have a greater impact on the teaching and learning of language arts than of mathematics, so the teams looked primarily at English-speaking countries. All were high-performers on PISA except Singapore, which did not participate, and England, which as in mathematics was selected partly for its cultural links to the United States.

MOSAIC

Multiple Options for Student Assessment and Instruction Consortium

Memorandum of Understanding

This Non-Binding Memorandum of Understanding ("MOU") is entered into by and between the lead state(s): Wisconsin, Nebraska, and Missouri, and Iowa. The purpose of this agreement is to establish a framework of collaboration, as well as articulate tasks in support of a Multi-State Consortium in its implementation of an approved Standards and Assessment Section of a Race to the Top grant. States might choose to participate in this Consortium even if their Race to the Top grant application is not funded.

I. PROJECT PROPOSAL

A. PARTICIPATING SEA RESPONSIBILITIES

A Consortium of states proposes to build a balanced assessment system of formative and benchmark assessment in a Race to the Top grant application. A state might choose to participate in this agreement through funding of its own choosing. The name of the system to be built is Multiple Options (for) Student Assessment (and) Instruction Consortium (MOSAIC). The MOSAIC system will be designed to complement a summative assessment system aligned to the Common Core such as the one being proposed under the SMARTER Consortium or any other Consortia that may develop a summative assessment aligned to the Common Core.

The proposed Consortium tasks and activities described in the Race to the Top application include the tasks that follow below. States participating in the Consortium will need to determine which of the tasks they wish to undertake with this Consortium. This decision may be made after the submission of the MOU.

Task 1.1.1 COMMON CORE: **The consortium states will adopt the Common Core Standards.** Within one year of state adoption, all districts within the consortium states will have adopted the Common Core Standards, will have integrated the standards to their local curriculum, and will have aligned professional development to familiarize staff with the college and career-ready expectations.

Task 1.1.2 PROFESSIONAL DEVELOPMENT—CURRICULAR INTEGRATION: **The consortium states will develop and build professional development materials around the instructional integration of Common Core standards.** This will include curricular frameworks aligned to the Common Core, defining of learning progressions within content areas, materials on instructional strategies, and suggested interventions. All materials will be disseminated across the states within the consortium and made available in a web-banked system.

Task 1.1.3 INSTRUCTIONAL SUPPORT SYSTEM: **The consortium states will have access to a computerized system that will provide opportunities for districts to** load the system with formative/local assessment tasks, items, and instructional materials including performance assessments. These can be shared across states, and customized for local use. All will be aligned with the Common Core and will be available electronically to students and teachers with timely data turn-around.

Task 1.1.4 STATE FLEXIBILITY: **Each state will define the level at which districts/schools in their state participate in the formative/benchmark assessment system. This may vary from state to state, depending on how each state defines voluntary versus optional participation.** (One level of required participation within a state might be to require the state's persistently low performing schools and districts to participate in this comprehensive assessment system, and to require that student performance data be tracked over time for growth and improvement.)

Task 1.1.5 REPORT DEVELOPMENT: **Each state will contribute to the development of district, school, and student-level performance reports on the Common Core.** Reports will be generated in parent-friendly and teacher-friendly formats to track progress on the Common Core standards. Emphasis will be placed upon growth and improvement over time, with customized feedback about suggested next-steps based on the student's performance.

Task 1.1.6 BENCHMARK ASSESSMENT SYSTEM: **Each state will contribute to the development of a benchmark assessment item bank with the capabilities for adaptive testing.** From this item bank, common diagnostic/benchmark tests will be developed across the "total package" consortia states through a consortia bid process to a single vendor. Each state will contribute field-tested items to the bank. This bank will be used to diagnose student strengths and deficiencies and serve as an "early warning" system. Common performance standards and cut scores for these diagnostic/benchmark tests will be set across the consortium of states. The common tests will be loaded into the computerized system for immediate data turn around. The common tests will be available to districts/schools within each state as defined by that state – varying levels of participation will require different cost to each state to implement, most likely on a per-pupil basis. (States participating at the Partner or Associate level may access items in the bank, but may not utilize the consortia-developed common assessments).

Task 1.1.7 PROFESSIONAL DEVELOPMENT—USING DATA TO IMPROVE INSTRUCTION: **Each state will contribute to the development of hands-on training and workshop modules for educators that focus on user-friendly strategies to make data-informed instructional decisions based upon formative, benchmark, and summative assessment results.** All materials will be disseminated across the collaborating states.

The selection of tasks by each SEA participating in the Consortium will determine the level of participation of each respective state. There are three levels of participation that may be selected by each SEA in the Consortium. While the level of participation does not need to be selected at the time of signing the MOU, by its signature the state is indicating its interest in participating at a minimum of Level Three.

- **Level One: "Total Package"** – The state participates in **all seven tasks** with a common vendor, and shares in all resources available through the project, including all formative/benchmark assessments developed under the project. The state has an active role in developing, disseminating and sharing professional development tasks and materials.

- **Level Two: "Partner"** – The state contributes to the item bank (**Tasks 1.1.1, 1.1.2, and 1.1.6**) and professional development materials, and may use components in their state for state-specific work. (ex: state does not use common assessments developed from the bank; instead, uses the bank to create their own assessment tools with a separate vendor)

- **Level Three: "Associate"** – The state contributes to the item bank, (**Task 1.1.6 only**) and may use components in their state for state-specific work. The state does not contribute to or have access to professional development components developed through the project.

B. RESPONSIBILITIES OF ALL SEA PARTICIPATING IN THE CONSORTIUM

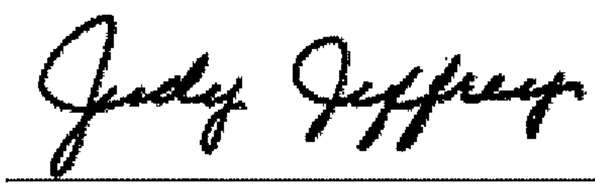
1) Each participating SEA in the Consortium will appoint a key contact person for the Race to the Top grant.

2) These key contacts from each State and the lead state(s) will maintain frequent communication to facilitate cooperation under this MOU.

3) Participating SEA grant personnel will work together to determine appropriate timelines for project updates and status reports throughout the whole grant period.

This Non-binding Memorandum of Understanding shall be effective beginning with the date of the last signature hereon:

SEA Superintendent/- Participating State Chief/Commissioner (or equivalent authorized signatory)



January 5, 2010

Signature | Date

Judy Jeffrey | Director, Iowa Department of Education

Print Name | Title

Authorized Lead SEA Official - Lead State
By its signature below, the lead state(s) hereby accepts the SEA as a Participating SEA in the Consortium

Official State Designee | Date

Print Name | Title

Please email this signed page by January 5, 2010 to

lynette.russell@dpi.wi.gov **and** **pat.roschewski@nebraska.gov**
or fax to
(Fax) 608.266.8770 **and** **(Fax) 402.471.4311**

States participating in the MOSAIC consortium

The following states have submitted a signed Memorandum of Understanding (MOU) to participate in the Multiple Options for Student Assessment and Instruction Consortium (MOSAIC) consortium to provide high-quality summative assessments. Listed below are the states that have submitted a signed MOU to participate in MOSAIC.

State	Date MOSAIC MOU-Received	Lead or Participating State
Delaware	January 5th, 2010	Participating
Hawaii	December 31st, 2009	Participating
Idaho	December 22nd, 2009	Participating
Iowa	January 5th, 2010	Participating
Kansas	January 5th, 2010	Participating
Kentucky	January 5th, 2010	Participating
Maryland	January 5th, 2010	Participating
Michigan	January 4th, 2010	Participating
Minnesota	January 8,2010	Participating
Mississippi	January 5th, 2010	Participating
Missouri	January 5th, 2010	Lead
Montana	January 7th, 2010	Participating
Nebraska	January 6th, 2010	Lead
New Jersey	January 5th, 2010	Participating
North Dakota	January 5th, 2010	Participating
Ohio	January 6th, 2010	Participating
Oregon	January 6th, 2010	Participating
Pennsylvania	January 8th, 2010	Participating
South Carolina	January 6th, 2010	Participating
South Dakota	January 4th, 2010	Participating
Tennessee	January 5th, 2010	Participating
Utah	January 5th, 2010	Participating
Washington	January 4th, 2010	Participating
Wisconsin	January 6th, 2010	Lead
Wyoming	January 4th, 2010	Participating
Total # of states that have submitted signed MOUs for MOSAIC*	**25**	

* As of 1/8/2010

APPENDIX C

Appendix C

Attachment Title	Relevant Selection Criterion	Page #
Iowa Department of Education Data Warehouse: EdInsight (Overview)	(C)(2)	Appendix C, page 3
Statewide Longitudinal Data System (SLDS) Grant Narrative	(C)(2)	Appendix C, page 6
Iowa Data Warehouse (EdInsight) Data Training	(C)(3)(i)	Appendix C, page 32

IOWA DEPARTMENT OF EDUCATION
DATA WAREHOUSE: EDINSIGHT

Overview

The transformation of the data infrastructure for the Iowa Department of Education (DE), and to a certain degree the education data infrastructure throughout the state, has begun. As of the beginning of January 2008, the DE entered into a contract with Claraview, Inc., for a data warehouse, a.k.a. EdInsight. EdInsight has a "back end" that will have three sets of data loaded during implementation: Project EASIER, which is student level data; IMS, special education student level data; and Iowa Testing Program student level data. EdInsight will link all these disparate data together for analysis across these domains of information enabling new and meaningful analysis. On the "front end," different education stakeholders (DE staff, area education agency staff, and local district staff) can access data in preformatted reports and more sophisticated analytical tools, dependent on the user's expertise and security clearances.

Implementing EdInsight will take over two years. The DE has received federal funding to support outreach to a wide variety of stakeholders to design the preformatted reports and analysis tools. The DE has recently completed a prototype version of the data warehouse. Full blown development of version 1.0 is currently underway and will be completed in March 2009.

Vision

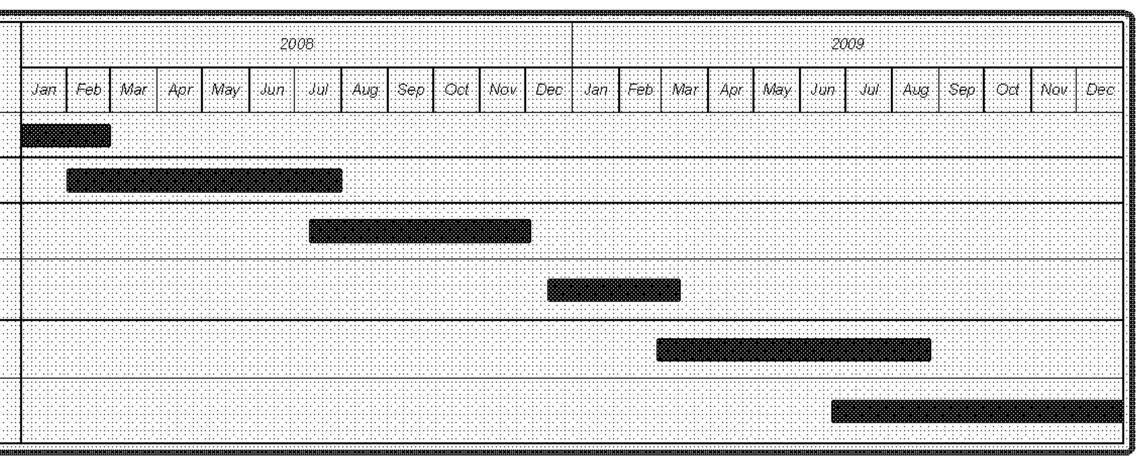
Provide the Iowa education community consistent and accurate longitudinal information on education outcomes and the analytical tools needed to improve decision making and student success.

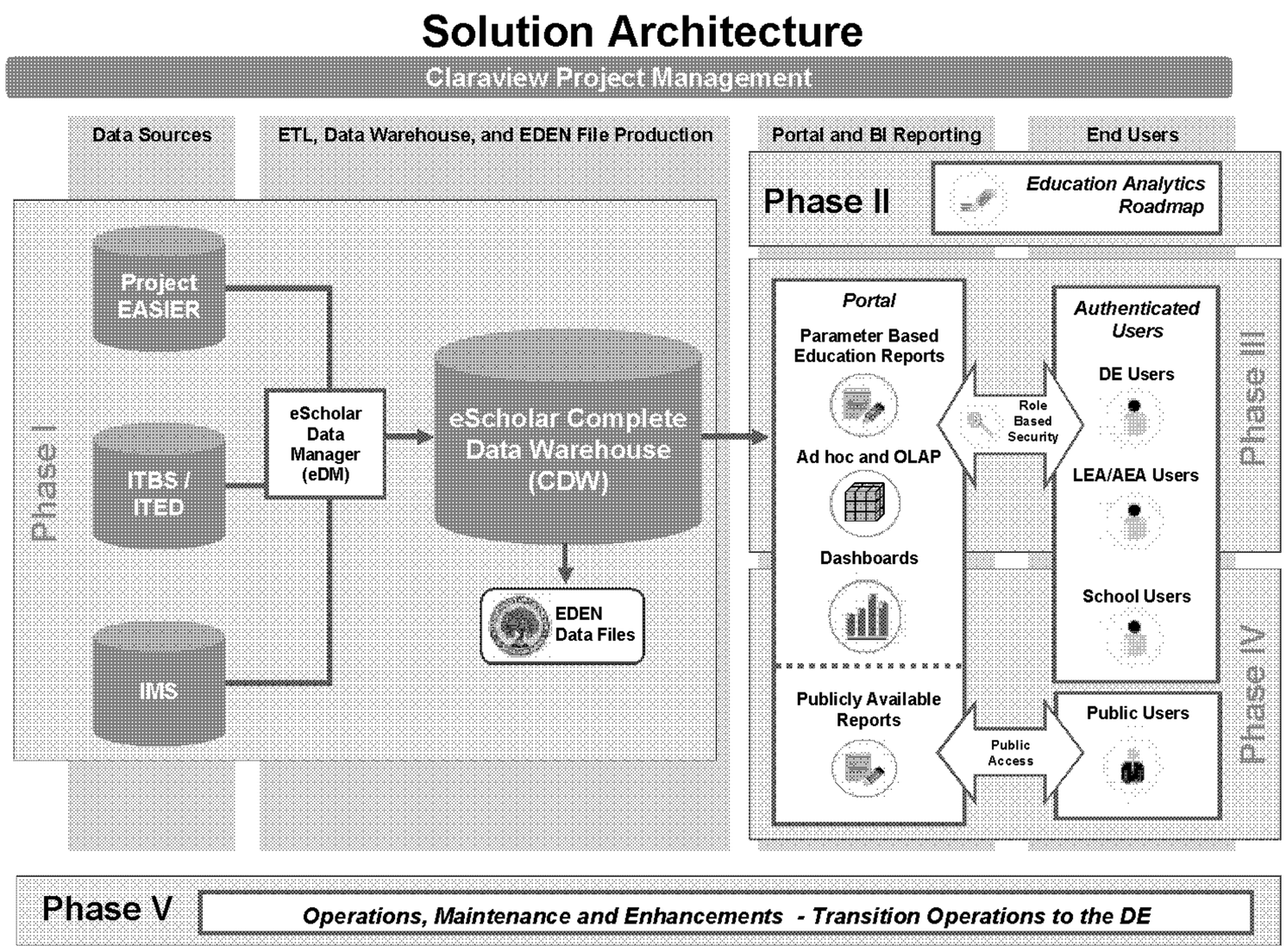
Goals

1. Provide the education community a single repository of combined data from multiple sources on one common system.
2. Provide tools and training in the use of data for benchmarking and longitudinal and comparative analysis.
3. Empower data driven decision making for education stakeholders.
4. Increase confidence in data by defining and implementing processes to improve data consistency, reliability and quality.

Proposed Timeline

ID	Task Name	Start	Finish	Duration
1	Project Ramp Up	1/2/2008	2/29/2008	8.6w
2	Phase 1: Data Acquisition and Loading	2/1/2008	7/31/2008	26w
3	Phase 2: Education Analytics & Prototype	7/11/2008	12/3/2008	20.8w
4	Phase 3: Rollout of Education Portal w/ Top Ten Reports – Version 1.0	12/16/2008	3/12/2009	12.6w
5	Phase 4: Portal Refinement and Report Expansion – Version 1.5	2/26/2009	8/25/2009	25.8w
6	Phase 5: Operations, Maintenance and Enhancements	6/22/2009	4/8/2010	41.8w





Data and Reporting Needs Assessment

The DE partnered with Iowa AEA's to conduct a data and reporting needs assessment among local school districts and area education agency staff from across the state. The goal of this assessment was to solicit user input on the portal design and reporting interfaces for the statewide rollout of EdInsight. The DE utilized a two-pronged approach in gathering information by: 1) conducting a statewide survey to quantify the magnitude of responses and 2) convening a series of focus groups to capture the depth and breadth of qualitative aspects. The target audience contained district superintendents, principals, assessment coordinators, curriculum directors, teachers and other district personnel, as well as AEA staff. There were 179 participants in the 20 focus groups held statewide, two per AEA, and 445 survey respondents. Triangulating findings from both of these techniques led to the selection of the first ten report areas:

Initial Ten Report Areas for EdInsight Rollout	
Assessment/Growth	Curriculum
Equity School Improvement	Special Education
AYP Report	Transfer of Student Historical Data/Student Profile
APR Report	School/District Comparison
Enrollment	School Report Card for the Public

Committees

To ensure stakeholder input into EdInsight is on-going and addresses the needs of the entire education community, four committees support EdInsight in different ways: Steering directs; Advisory shapes; Data Governance defines, and Project Management engineers.

Budget

The DE has been appropriated cumulatively $1.2 million in initial funding from the legislature for the EdInsight project through FY 09. The initial implementation will cost the DE $2.9 million. The Department is exploring other avenues for sustained funding.

EdInsight

EdInsight Report Numbers

Family	Subject Area	Main Report Areas	Sub Report Areas		Student Detail Report
1.0 ASMT	Assessment / Growth	ASMT 1.1 – Individual Reports	ASMT 1.1.1	Individual Performance Detail	Student Level Detail Report
			ASMT 1.1.2	Individual Performance Trend and Comparison	
		ASMT 1.2 - Group Reports			
		ASMT 1.3 - Cohort Reports			
		ASMT 1.4 – Assessment Cube			
		ASMT 1.5 - Alternate Assessment			
2.0 EQTY	Equity / School Improvement	EQTY 2.1 – AEA/District Equity Report			
4.0 APR	APR Report	APR 4.1 – Student Achievement			
		APR 4.2 – School Report Card for the Public			
5.0 ENRL	Enrollment	ENRL 5.1 – Attendance Report			
		ENRL 5.2 – Certified Enrollment Report			
6.0 CURR	Curriculum	CURR 6.1 – Curriculum Accreditation Report			
		CURR 6.2 – Student Course History Report			
		CURR 6.3 – College Credit Course Report			
		CURR 6.4 – Higher Level Course Report			
7.0 SPED	Special Education	SPED 7.1 – Suspensions and Expulsions			
		SPED 7.2 – Achievement			
		SPED 7.3 – Graduation			
		SPED 7.4 – Drop Out			
		SPED 7.5 – Disproportionality			
9.0 UTIL	Utilities	UTIL 9.1 – Transfer of Historical Data			
		UTIL 9.2 – School and District Comparison Report			
11.0 IND	Student Indicators	IND 11.1 - Graduation			
		IND 11.2 - Drop Out			
		IND 11.3 - Attendance			
		IND 11.4 - Discipline			
12.0 PRGM	Program Indicators	PRGM 12.1 - At Risk			
		PRGM 12.2 - Talented and Gifted			

	New Reports
Prototype Release	4
Release 1.0	5
Release 1.5	15
	24

Statewide Longitudinal Data Systems (SLDS) Grant Narrative

a) Need for the Project:

The Institute of Education Sciences (IES) grant awarded to Iowa in 2009 provided the framework upon which Iowa's Unified Longitudinal Data System Infrastructure became a cogent, strategic vision. The Iowa Department of Education (IDE) recognized the need and the importance of a comprehensive, accurate, and timely statewide longitudinal data system. IDE was in the process of implementing two cornerstone pieces of such a Statewide Longitudinal Data System (SLDS) – a data warehouse and electronic transcripts – with funds already available when the IES grant was awarded. Prior to the IES grant, IDE's education data infrastructure vision was to: 1) generate a unified infrastructure for educational data; 2) establish interconnectivity between entities for analysis and planning; and 3) develop a prekindergarten (P)-20 system for tracking individuals throughout their educational career. The IES grant provided seven activities to bring this vision to fruition. To briefly summarize the current state of the SLDS, this section will review each of the activities, noting from where the funding has and will come, and then it will examine the current SLDS in whole relative to the 19 elements and capabilities of the America Recovery and Reinvestment Act (ARRA) SLDS Grants[1].

Current Status of Iowa's SLDS

The first activity, the statewide educational data warehouse – EdInsight, was undertaken with appropriations from the Iowa Legislature and other IDE funding nearly one and one-half years before the 2009 IES grants were awarded. EdInsight is the Iowa Department of Education's data warehouse where multiple years of student-level data are stored and can be linked and used for local decision making. Three sets of P-12[2] student-level data currently reside in EdInsight: 1) Project EASIER (Electronic Access System for Iowa Education Records) which includes demographic, enrollment/attendance, program, assessment, graduate, suspension/expulsion, and high school course data; 2) Information Management System (IMS) which includes statewide special education data; and 3) Iowa Testing Programs (ITP) which includes achievement data from the Iowa Tests of Basic Skills (ITBS) and the Iowa Tests of Educational Development (ITED).

To systematically gather initial requirements for EdInsight, IDE conducted 20 stakeholder focus groups across the state to interview the ultimate end users. To extend and triangulate the results of the focus groups, an online survey was also conducted to gather feedback from over 400 potential users statewide. A group of identified stakeholders has been a guiding force in the decision-making process for EdInsight and has provided input on an initial feasibility, request for proposal (RFP) development, portal design, and reporting interfaces. In addition to this Advisory Committee, EdInsight has engaged stakeholders in Steering and Data Governance Committees. These will be discussed in detail in the Governance Plan Section of the Narrative, as all of the committees have become more integrated with the SLDS and some of the committees' jurisdiction has been expanded to encompass the entire SLDS.

EdInsight Version 1.0 was released in early October 2009 and has linked data from these three sources resulting in new and meaningful analysis opportunities for a limited number of IDE, area education agency (AEA), and local district staff. These identified stakeholders have access to data in preformatted

[1] In fact, there are 22 capabilities and elements, since the State Fiscal Stabilization Funds (SFSF) is counted as one capacity, when in fact it is four separate criteria or capacities consisting of 34 data elements and three descriptors.

[2] Data for students prior to kindergarten have serious limitations. The system for providing programs and educational programming is fragmented, and so are the data.

reports (See Appendix A for list) and will have access to more sophisticated analytical tools for use with up to four years of data, depending on their expertise and security clearances. (See Appendix A for a list of reports in v. 1.0, those in development for v. 1.25, and those planned for v. 2.0.)

Two other activities that were proposed as part of the 2009 IES grant are contained within EdInsight: reporting the National Governor's Association (NGA) graduation rate through EdInsight and expanding the data sets that could be reported on in EdInsight. The IES funding allows Iowa to add dropout information to EdInsight for the calculation of graduation and cohort dropout rates with greater accuracy. Currently, IDE is performing the calculation using statistical software outside of EdInsight. Once IDE has perfected the process, it intends to augment EdInsight with ED*Facts* specifications and additional data which will satisfy ED*Facts* reporting requirements. Ultimately, EdInsight has the ability to become Iowa's reporting platform to ED*Facts* provided the requisite additional source data are loaded.

There are plans to expand the data sets in EdInsight to include:

- Teacher data which are already populated in an eScholar template within EdInsight for use in district equity reviews per Title VI of the Civil Right Act of 1964. The review requires data on race/ethnicity of school personnel per classification per building per district. While loading these data and making them operational for the equity report was a major step, several structural barriers remain before teacher data can be linked to students and their achievement data even though all three data sets currently exist in EdInsight.
- Finance data will be added to EdInsight using the 2009 IES grant funding beginning in 2010. A RFP is in the process of being written to develop business requirements for reports based on the finance data available through the state of Iowa Departments of Management, Revenue, and Education.
- Additional assessments will be included in EdInsight. ITP is under contract as part of the 2009 IES grant to develop an end of course assessment report for EdInsight that corresponds to the end of course assessment students will take as part of the new Iowa Core Curriculum Initiative. ITP researchers, in conjunction with The University of Iowa, are also providing psychometric support for other report designs, as well. There are plans to include other vendor assessments in EdInsight, also. Potentially Dynamic Indicators of Basic Early Literacy (DIBELS) data are scheduled to be included because it supports early development inquiry, but adding third party assessment data to EdInsight means committing long term to an ongoing cost which could become a maintenance issue later.
- P-12 transcript data will be collected as part of the Electronic Transcript and Student Record Exchange Project and will be added to EdInsight and will be discussed in that section.
- The Division of Community Colleges and Workforce Preparation within the IDE collects data from Iowa's 15 community colleges and is willing to incorporate that data into EdInsight. Unfortunately, the willingness of those involved was not enough to finance the integration in these lean budget times. Further, after review, it was ascertained that the process will require more technical engineering to make the division's system interoperable with P-12 data and that additional validation capabilities would be needed to ensure that the community college data are accurate and reliable when used for decision making.
- Disaster mitigation data will be collected. The Iowa Transcript Repository component of the electronic transcript system will provide IDE data to contribute to the enterprise. Further, two area education agencies (AEAs 10 and 11) are in the process of constructing data bunkers – physical structures designed to withstand natural disasters. All that remains to begin implementation in this area is the releases of the National Center for Education Statistics (NCES) monograph for protocol.

The fourth 2009 IES grant activity was a Standards-Based System for Interoperability. A system for the automatic transmission of student data would enable IDE and local education agencies (LEAs) in Iowa to

improve the accuracy and timeliness of data; it would also free valuable human resources currently expended in the manual data submission processes. A standards-based transmission system would also give LEAs the ability to quickly locate information on students transferring between districts. The interoperability is planned to extend to those other education stakeholders that already regularly share data with IDE: AEA, community colleges, and ITP.

There was an attempt to bid a School Interoperability Framework (SIF) network for Iowa education stakeholders as part of the electronic transcript contract which was signed in June of 2009. There was an internal ruling by the contracting office that the SIF compliant requirement for the electronic transcript system (a hub and spoke network among LEAs, AEAs, community colleges, Regent institutions, and the IDE) was not sufficient for notification to vendors who might have wanted to bid on SIF implementation for Iowa. To be completely transparent, IDE is currently writing a separate RFP explicitly for a SIF implementation.

From responses to the electronic transcript proposal, at least one vendor proposed a large scale pilot, over two-thirds of Iowa's districts, for the entire amount in Iowa's SIF line items for the 2009 IES grant. Iowa intends to pay for the fullest extent of SIF implementation it can afford with the 2009 IES grant. It is clear at this point in project initiation phase[3] that program implementation will need to include direct SIF support to each LEA in order to bring the less technologically savvy online: this is a significant additional cost at $5,000 for 361 districts – over $1.5 million more than included in the 2009 IES grant.

Activity five of the 2009 IES grant was to create interoperability with postsecondary systems at the Regent institutions. Currently, there is no practical interoperability; however, in some instances limited data have been matched manually for narrow purposes. Given there were no bridges between the systems, the concrete goal for the 2009 IES grant had been a simple one: deliver the "Freshman Report," individual student level analysis of incoming Regent freshman, back to their local school districts through EdInsight. The Freshman Report had been something the Regents were delivering to LEAs directly and independent of other data sources. Unfortunately, between the writing of the IES 2009 grant and its award in May of 2009, there was an opinion by the Iowa Board of Regents legal counsel that the Freshman Report may be in violation of the Family Educational Rights and Privacy Act (FERPA), so the reporting was discontinued.

The interoperability with postsecondary component of the 2009 IES grant was to start and incrementally build a relationship that would lead to a data sharing culture. Only one tangible deliverable had been identified: the focus was on incrementally establishing a relationship and process that would allow sharing to evolve. Hence, little monetary assistance had been requested from the 2009 IES grant for this facet of the plan. The ARRA assurance requiring an SLDS has necessarily expedited this process and increased the tangible outcomes considerably, thereby requiring dedication of considerable resources.

While there were some setbacks, there have also been substantial successes. First, the Board of Regents Office, and each Regent institution, have a representative on the Iowa Longitudinal Data System Steering Committee. These representatives attended their first Steering Committee meeting on October 15, 2009, to discuss the ARRA assurances and grant among other issues. IDE was glad to establish this formal relationship after numerous less formal meetings over the summer on these issues. Further, data sharing to some extent is in process of being implemented: limited, uni-direction (from secondary to postsecondary) sharing in the form of electronic transcripts.

Activity six of the 2009 IES grant was to link workforce and educational data systems. To assess the preparedness of high school graduates for future employment or education, IDE plans to link workforce information and IDE P-12 and community college data. There have been some one-time manual matches between these entities. Both Iowa Workforce Development (IWD) and IDE's Division of Community

[3] Refer to Project Management Book of Knowledge (PMBOK) in the Project Management Section for further details.

Colleges and Workforce Preparation are interested in sharing data regularly, so an integrated infrastructure is desired rather than the mere ability to have interoperability.

Minimal resources were requested from the 2009 IES grant. Beyond meeting expenses, the only significant financial expenditure was for EdInsight licenses for IWD. Resources from the 2009 IES grant were used for meetings to investigate the most appropriate location and structure for organizing and sharing this information. Initial exploration of the process and legal issues suggested a structure where wage and employment data were brought into EdInsight and oversight was provided with a jointly supervised person. IWD would be able to run analyses on individual data, but would only see aggregated results in the reports.

With a structure and process secured, the next step taken was to look for funding. IDE, along with IWD and the Iowa College Student Aid Commission (ICSAC) submitted a request to the Technology Governance Board (TGB), a board which oversees the statewide multi-agency information technology enterprise, in July of 2009 for the TGB annual Return on Investment (ROI) request for proposals to be funded. This collective application asked TGB for $500,000 to connect the agencies: design, map, code, hardware, etc. (It also included the jointly supervised data analyst: IWD employee IDE supervised when accessing data, which is what is proposed in this grant.) One of the arguments in asking for the ROI money was that it would help the state satisfy part of an ARRA assurance. At the TGB full committee hearing, there were questions regarding why ARRA money was not used to accomplish these tasks. (Iowa is unique: The Iowa Legislature actually appropriated the ARRA State Fiscal Stabilization Funds (SFSF) and they chose to reserve none for IDE.) Ultimately, TGB had considerably less money to award this year and this application was not funded.

The final activity and the other cornerstone of Iowa's SLDS are the Electronic Transcript and Student Record Exchange Project. This has been a long-term goal of IDE with $1 million secured prior to 2009 IES support (half from the aforementioned TGB process and the other half from legislative appropriation).

During the summer of 2009, IDE initiated the Electronic Transcript and Student Record Exchange Project which has four components: 1) the electronic exchange of transcript data from high schools to postsecondary institutions, 2) the electronic exchange of transcript data between postsecondary institutions, 3) the electronic exchange of P-12 student records between school districts when students transfer, and 4) the creation of a transcript repository for final high school transcripts that will house high school records for perpetuity and facilitate disaster recovery and mitigation as well as provide an additional data source for IDE and EdInsight. The transcript repository will also serve the citizens of the state by its capability to generate copies of transcripts on request.

Two committees of practitioners, the Postsecondary High School Transcript Committee and the P-12 Electronic Transcript and Student Record Task Force have provided ongoing support and guidance for this project. A major contribution of the committees was the content identification of a standardized four-year institution postsecondary transcript, community college transcript, Iowa high school transcript, and student record. Members also participated in the Request for Information and Request for Proposal vendor presentations that ultimately lead to the selection of Pearson as the project vendor. Following the vendor selection, the two committees were merged into one Electronic Transcript and Student Record Exchange Advisory Committee.

Ten project milestones have been identified by Pearson, the Electronic Transcript and Student Record Exchange Project selected vendor, and committees composed of IDE and vendor members have been formed for each. A weekly conference call for all vendor and IDE project personnel provides for ongoing milestone updates and continuous planning. The first of the four components – secondary to postsecondary – is targeted for spring 2010.

Capabilities and Elements to be Developed or Improved with this Grant

Considerable work has been done, is underway, or is being planned in Iowa to implement an education SLDS. Obviously, gaps remain in the development, especially when compared to the required 19 specific capabilities and elements in the current grant. Fortunately, the initial ground work in these areas has lead to a more refined view of where gaps actually exist. It will be the intent of this Request for Application (RFA) to target identified gaps to address the 19 capabilities and elements in the grant. The next section of the narrative requires outcomes for each of the capabilities and elements to be delineated, so only a general overview of what the grant will target to improve will be presented here.

Generally speaking, there are some fairly well developed education data infrastructures in Iowa. For the most part they are distinct – prekindergarten, K-12, community college, public postsecondary, private postsecondary, and financial aid. What needs to be done is to connect required data and get them into a common repository for analysis. As previously explained the 2009 IES grant, along with Iowa's initial investment and continuing commitment, began to move Iowa toward this interconnectivity and analysis goal.

Interconnectivity needs to be expanded. Hierarchically speaking, the original funding in the 2009 IES grant should SIF enable approximately 300 of the 361 Iowa LEAs. As previously mentioned, Iowa is in the process of writing an RFP for SIF implementation. Electronic transcript access and data element standardization is limited to public Institutions of Higher Education (IHEs), which is only a subset of the ARRA requirement, so that area needs expanded.

The continuum also needs expanded in regard to cohorts. Currently, only children who attend an LEA prekindergarten program or who receive special education services are captured by a data system that could be included in EdInsight. Unfortunately, that is only a portion of the prekindergarten student population in Iowa as many are enrolled in federally funded programs or Iowa Department of Human Services regulated day care. This grant will facilitate the integration of these programs' data into EdInsight and thus provide the resources to create comprehensive reports on this preschool population.

The SLDS needs support integrating the other end of the continuum as well. IDE's Division of Community Colleges and Workforce Preparation is in the process of examining and re-engineering the way it collects data from the community colleges themselves (it may not be SIF). So per the 2009 IES grant, this objective moves forward. However, once the community college data are provided to IDE they will still be segregated inside the Division of Community College and Workforce Preparation's separate data system. Given the lack of state funding, federal assistance is needed to integrate these two systems, to ensure real time capture of administrative outputs once interconnectivity is achieved. Once integrated, the processes and technologies can be maintained, so that data flow into and are reported from EdInsight.

Other postsecondary and workforce data systems also need interconnectivity. The unique student identifier is now required in state funded public education entities, prekindergarten through postsecondary thereby facilitating the linking of data. The e-transcript system would be augmented to carry required data back from the postsecondary to IDE with this grant. Further, this grant would fund resources to participate in a National Clearinghouse pilot, which would provide more robust data. By including the unique student identifier as an element to the Clearinghouse, that organization becomes the crosswalk from the unique student identifier to the social security number for matching with IWD.

There are two other major categories of students who are not captured in any electronic data system: 1) children in state detention and psychiatric facilities, and 2) children that leave Iowa's borders. The grant would provide a statewide student information system for children in state facilities who receive their educational programs in those facilities. This would create a data collection mechanism for these facilities and also allow them to participate in the electronic student record exchange component of the Electronic Transcript and Student Record Exchange Project, thereby directly addressing the issue of students' records keeping pace with students who transition in and out of these facilities. The funds will

also be used for a joint project among the states in the Midwest Education Information Consortium (MEIC) for a student locator application to allow students to be identified who cross state borders within the region[4]. In this region, many large urban centers are located on state borders. This project component will provide more complete data on these border students who transfer which will directly impact such reporting as graduation rates and the Annual Yearly Progress (AYP) for the high stakes reporting of No Child Left Behind.

The grant will fund improving the quality of data that go into and reporting that comes from EdInsight. The continuum will span prekindergarten through higher education entities and the workforce. Prekindergarten data will be more inclusive and will generate comprehensive reports from several programs. Most importantly, the mechanism to answer unique early childhood developmental questions will be available. The quality and completeness of the K-12 data will be improved, by addressing the systematic leakages previously referenced. Community college data, due to underlying improved standardization of curricula, will have higher quality data (and more consistent programming) to include in the SLDS. Linking with Regent's data will move beyond the limited potential of reproducing one existing report – the Freshman Report – to interconnectivity and presumably the creation of several reports. There will also potentially be federal reporting with refreshed data on developmental courses in postsecondary, students' entry and exit from the education system, and other research questions yet to be determined on preparing students for their postsecondary education experience: a considerable increase over the 2009 IES grant expectations.

How These Capabilities and Key Elements Support Iowa's Education Improvement Efforts, Goals, and Accountability System

More precisely, it is how IDE and its partners propose to implement the capabilities and key elements in this grant that support Iowa's education improvement efforts, goals, and accountability system. Iowa has a triumvirate strategic vision and was in the process of implementing an SLDS prior to this grant opportunity. Each of the solutions being proposed in this response to bridge the gap from the parameters of the SLDS underway in Iowa to those further expectations delineated in the ARRA assurances, and specifically this grant, are designed to coincide with our education improvement efforts, goals, and accountability system. There is not space to examine each proposed solution with this lens; however, the following provides an expansive overview of the different levels of integration.

EdInsight, Iowa's SLDS reporting tool, has been focused on the state's education improvement efforts, goals, and accountability system since its inception as evidenced by its four goals: 1) provide the education community a repository of combined data from multiple sources on one common system, 2) provide tools and training in the use of data for benchmarking and longitudinal and comparative analysis, 3) empower data driven decision making for education stakeholders, and 4) increase confidence in data by defining and implementing processes to improve data consistency, reliability, and quality.

Practically, that means EdInsight contains those data educators want, need, and can use for continuous improvement. Review EdInsight's initial reports in Appendix A: assessment reports over time, Annual Progress Report, expulsion rates for special education (a federal indicator), curriculum reports for school improvement, etc. As has been stated, these reports were designed with user input and system planning so they address the need for data and how it's delivered to the education community. Recall, how each data set that is to be added to EdInsight, previously described in the Current Status of Iowa's SLDS subsection, was being added for the reason of supporting Iowa's education improvement efforts: teacher data for racial/ethnic equality among others, end of course assessment data for the new Iowa Core Curriculum initiative, finance data for per pupil financial equity (an Iowa constitutional requirement), etc.

[4] MEIC member states: MN, IA, MO, ND, SD, NE, KS

Using EdInsight's efforts to be customer centric and its explicit goals as the SLDS expands into new domains of data, such as postsecondary, will be crucial. The SLDS Steering Committee with P-20 representation from field staff to administrators has already agreed to recommend a research agenda for some of the less clearly defined elements, such as Elements 11 and 12; the research agendas must be approved by the respective governing bodies. Further, the 2009 IES grant includes market research money so direct end user input can again be gathered to chart the future development of EdInsight reports. Maintaining this focus is how these grant capabilities and elements will support Iowa on a collaborative level that is geared to localized solutions.

Another way these capabilities and elements support Iowa is future policy direction. As webinars on this RFA stressed, this grant should reinforce states' other ARRA educational assistance: State Fiscal Stabilization Funds (SFSF) Phase II and Race to the Top. Iowa has been engaged in a dialogue with Kansas, Nebraska, and Wisconsin regarding the formation of a consortium to apply for Race to the Top funds. While the group is soliciting other states to join, it should be noted that three of the four states participating in the initial MEIC student locator project would also be involved in this one. This consortium has already put a list of participant expectations together that will necessarily engage Iowa's SLDS (see Appendix A for Task List).

EdInsight becomes an integral part of the solution as a delivery mechanism. The consortium plans, which Iowa would actualize include student, building, and district level student performance reports in agreed upon common core areas. The reports, that are largely the Iowa Core Curriculum reports previously referenced, will be generated in teacher-friendly formats. Emphasis in this reporting will focus on growth and improvement over time as well as the use of trend analysis, which is already an emphasis in EdInsight reporting.

A further expectation of the consortium is for teachers and administrators to make data-informed instructional decisions based upon formative, interim, and summative assessment results. Given that the summative data are being delivered through EdInsight, the interim test results would be as well.

The consortium also has the expectation that the interim assessment would draw from an item bank with the capabilities for adaptive testing. From this item bank, common benchmark tests will be developed across the collaborative states. Each state will contribute field-tested items to the bank. This bank will be used to diagnose student strengths and deficiencies and serve as an "early warning" system. Common performance standards and cut scores will be set across the consortium states. The common tests will be loaded into the University of Kansas' Computerized Assessment and Learning (CAL) system for immediate data turnaround. This online engine will be available to port results from assessments directly to the SLDS. The national core standards could then be used to identify sub-scores to include in the SLDS to be used in monitoring gaps, assessing teacher/principal quality, and other information connected with federal assurances (e.g., the common tests will be available to all buildings and districts within each state, but will be a requirement for the persistently low-performing schools). The grant capabilities and elements focused on timeliness and wider distribution (i.e., an enhanced security model) facilitate this reality.

A third level at which the grant capabilities and elements support Iowa are as a by-product. Take Capability 1 that requires a unified P-20 system. There are pupils that are not systematically captured by the current system, specifically those in state placements. The student information system (SIS) being proposed would address this data leakage from the system with the "Residential Educators Student Information System." This SIS adds to the completeness of Iowa's SLDS and produces the practical outcomes:

1) Assist students in residential facilities and/or the foster care system to retain the partial credits and units earned during multiple moves or placement transfers. Iowa does not have a standardized

credit system and creates "credit" disparity if a student moves in and out of districts with different credit requirements.

2) Assist school district personnel in tracking partial records/credits earned in non-school-district settings. District personnel are already overwhelmed with trying to "count" hours or "add" pieces of time or work completed by students. The database will assist districts in having this information in one place and units tracked will match the Iowa Core Curriculum Essential Concepts and Skill Sets.
3) Assist child placement agencies in making the most educationally appropriate placement for students awaiting placement and use the database for easing the record transfer as required by federal and state regulations.

Another readily apparent example of how the grant capabilities and elements support Iowa's educational efforts is Element 9 that reflects student-level transcript information, including information on courses completed and grades earned. Iowa's K-12 course data are relatively standardized using the NCES coding structure and School Codes for the Exchange of Data (SCED) codes. Iowa's community college data are not nearly as standardized. For example, when the Iowa Legislature changed the per pupil weighting for concurrent enrollment in 2008, more financial state assistance was given for career and technical education (CTE) courses than to arts and sciences courses when secondary pupils enrolled in postsecondary courses. The next year, the community colleges offered significantly more CTE courses without any significant change in their programs. (The adjustment which was analyzed to be revenue neutral actually resulted in a jump from $6 million to $13 million.)

Clearly, community college course data need more standardization so they are meaningful when integrated into the SLDS for analysis. To standardize Iowa's community college courses and programs both intra- and inter-state, thereby improving data quality on the front-end and analytical potential on the backend, the Division of Community Colleges and Workforce Preparation views CurricUNET as the solution. This proprietary application among its many features allows community college faculty to consult a database of course titles and content to discern how to categorize a course. This is a much more organic approach to course and program coding; as evidenced by the fact that two of the largest community college systems in the country, California and Illinois, have already adopted this system.

<u>Training and Technical Assistance Needed Throughout Iowa on EdInsight to Support Improvement Efforts</u>

Now that EdInsight has been developed and is currently deployed to a pilot group of educators, a statewide rollout to the education community is the next step to actual implementation and will involve hands-on training of end-users. To accomplish this, IDE will need to hire additional staff to develop training materials and conduct the hands-on training sessions for AEA and LEA personnel. (The 2009 IES grant has money to address this issue for deployment to the extent that was envisioned within that scope; the SFSF Phase II now requires a considerably larger audience.) The potential impact of EdInsight will become a reality as these end-users become comfortable and familiar with it as a data quality tool that can assist in data driven decision making thereby increasing confidence in data which will lead to the implementation of processes that will improve data consistency, reliability, and quality.

SLDS data quality needs to be addressed at the front-end, not just as an afterthought process once data are submitted. IDE currently has a process in place to run validation checks on the data coming from the three source systems feeding EdInsight by running complete edit checks and resolving glaring data issues. This grant could leverage this process by augmenting 2009 IES grant resources. An example would be using the director of data quality to create some proactive reports and metrics that would be used by local school districts.

The reports built for EdInsight will allow IDE to coordinate data quality checks on districts' data with the goal of continued improvement of data being submitted. This feature would enhance Iowa's state data

audit system being proposed in Element 5 and would ultimately result in a data quality mechanism that would provide districts with an ongoing opportunity to review and correct data over time. Such a process will enhance data quality conversations throughout the education community.

Data security is often the first concern voiced in group discussions of the SLDS regardless of the make-up of the audience. Therefore, training that includes the parameters of FERPA will be needed to alleviate this concern. Also, SFSF Phase II requires appropriate access to data by nearly everyone in a school district. In Iowa, a distributed security model is currently used to grant access to secure applications. In the future, since districts will need to grant access to more personnel, training will need to reach audiences that have generally not been included in data security conversations. An example of the need for training is demonstrated by results from a fall 2007 survey of LEA staff conducted by a third party vendor for IDE. A few of the indicator responses were unsettlingly low: 1) 46 percent responded yes their district had a written FERPA policy; 2) 3 percent responded yes their district had a policy on minimum cell size when presenting aggregated data; and 30 percent could track who accessed a student record.

Significant training will also be needed in how to appropriately conduct analysis using Iowa's SLDS. Currently, gaining access to EdInsight requires mandatory training and testing to discern analysis competency. ITP has been involved in data *literacy* training. There has also been significant training on the functionality of the application, which this is distinctly different from data literacy. The New ARRA legislative requirements will mean expanding the use of data for accountability purposes. This variability in the audience, including non-researchers and non-educators, will call for more data literacy training geared towards those without a foundation in these types of analyses and the use of mass delivery media, such as online modules.

How Iowa's SLDS Will Support the Requirements of the State Fiscal Stabilization Fund

The only way Iowa can meet the explicit requirements of SFSF is with the support of this grant. Without grant support, the probability of constructing new data flows with additional ETL and report generation is infinitesimally small. Granted, Iowa has committed to building a SLDS beginning with legislative appropriations and IDE efforts and most recently as the recipient of a 2009 IES grant. These funding sources have provided the opportunity to build a foundation in necessary areas with a general long-term vision consistent with the tenants in the array of ARRA educational funding opportunities: recall, Iowa's triumvirate vision from the beginning of the narrative. However, without additional financial assistance, the IDE will not be able to accomplish the additional work necessary to meet the additional SFSF requirements.

IDE does not have the financial or human resources to accomplish the additional data collection, linking, and reporting that are explicitly stated in the Phase II application and that will result from further definition of requirements in the SFSF. Like most applicant states, Iowa's budget is in dire circumstances. This fiscal year, state agencies had a 10 percent across-the-board cut and IDE will be reducing in force (RIF, e.g., lay-offs). Next fiscal year, the state is projected to have slightly more than a $1 billion shortfall in revenues for a roughly $6 billion budget. K-12 education accounts for roughly 40 percent of the budget and nearly 60 percent when the Regent institutions are included; hence, there must be further significant reductions to education to balance the budget, making it impossible for additional data system funding and making it likely there will be less.

IDE has an additional fiscal reality that makes it unique. IDE received no SFSF money: it all was allocated to LEAs, AEAs, community colleges, and Regent institutions. As part of a larger political dynamic, the Governor received legislative approval to use a large portion of the Government Services Fund for an infrastructure bonding program and in turn the legislature was given the authority to allocate the SFSF monies. There were no additional monies neither proposed nor approved for IDE to meet the four assurances of the SFSF.

To transform the foundational SLDS that is underway in Iowa into the one more explicitly defined by the SFSF will be a matter of filling in the gaps with the grant resources from this RFA. Many of the gaps are relatively minor though they require considerable labor: inclusion of more source data that are readily available from a participating partner - the Alternate Assessment from ITP – or adding additional special education data elements from IMS – two of three current EdInsight source systems. These requirements will mean profiling; defining; extracting, transferring, and loading (ETL); and mapping data and then designing and generating reports, which is something the core EdInsight project team is familiar with and has accomplished successfully. All that will be necessary to meet the expedited timeline is additional labor.

Some of the gaps that must be spanned are technical. Throughout the SFSF there is the requirement for more widespread reporting of data, such that all indicators and descriptors in the SFSF are transparent and attainable by education stakeholders. These raise technical questions, such as the following: What are the technical security solutions to widespread access and what different impacts do these models have on transparency and some data warehouse functionality not inherently 508 electronic access compliant? What is available to make public portals 508 Level I compliant? Additional funding, for both additional servers and report generation, will be needed to address these technical issues. However, the grant also affords the opportunity for consultation with other grantees and educational opportunities thereby making available a more robust solution set from which state level decision makers then choose.

Spanning these gaps uses the financial resource of the grant, but it also leverages the technical insights that come from collaborations and learning with other grantees. Opportunities provided through grantee meetings, including those at larger venues have allowed IDE to air its system issues with a knowledge base and consult with other grantees about vendor performance one on one. Due to the budget crisis in Iowa, the only out-of-state travel in Iowa is federally or foundation funded; hence some funds will be used for collaboration with other grantees and regional initiatives (e.g., MEIC).

Finally, there are gaps that span both the technical and cultural: educator evaluation and linking with postsecondary data. Educator evaluation will require a rewrite of the Basic Educational Data System (BEDS), an IDE source system, and then will need reports designed for EdInsight's public portal. This all assumes that a standard educator evaluation exists, is meaningful, and is integrated into data systems for upload. This is not the case in Iowa, so considerable development work will need to be done on a standard tool even before data collection can be considered. This has security and integration technical issues embedded in it, but it also has cultural ones, such as the hot button issues of educators' performances being judged based on test scores. There is apprehension throughout the education community about the utility of these data.

Integration with Regent and private postsecondary institutions in Iowa is a significant technical and cultural undertaking. The manual linking of postsecondary data referenced earlier has been with the Division of Community Colleges and Workforce Preparation data to IWD and ICSAC. Regent data have traditionally been independent from K-12 data systems. FERPA has had a distinct impact in Iowa, recall the Freshman Report ruling. Additional legal resources will be needed.

The Regents have highly developed data systems that recognize and use various accepted postsecondary data protocol and transmission standards. Regent systems could independently satisfy Elements 1 and 2 in the grant; however, they are distinct from those at IDE. The Iowa Legislature mandated that postsecondary data systems contain the K-12 unique identifier for Iowa educated students thereby setting the stage for the logical conclusion with the additional SFSF requirements: the K-12 unique identifier system becomes the unique identifier for analytical purposes for the entire education system.

Many private postsecondary institutions are in the same situation regarding data systems as the Regents. However, the size and data systems vary widely in Iowa; many of Iowa's 31 private colleges are under 1,000 students. The SFSF requirements will force Iowa IHE to share data; the initial expense of

connecting those to systems for data sharing would be borne by the grant. There would be expenses for the initial electronic transcript system and for SIF given the timelines.

In fact, meeting the timelines will require early adoption of an interim system solution that might later be replaced when it comes to the actual infrastructure used for interoperability between K-12 and postsecondary. The public reporting requirement of the students enrolled in postsecondary per Iowa high schools per subpopulation within 16 months of their secondary graduation could be reported by the National Clearinghouse; however, the additional reporting requirement of the number of students who complete one year's worth of credits in two years could only be answered with data from students' particular institutions.

In summary, this grant will take Iowa from the foundation laid with EdInsight to a robust, comprehensive SLDS that will close existing gaps, support Iowa's efforts to improve education through collaboration with multiple institutions, agencies and states, and achieve the objectives of the State Fiscal Stabilization Fund.

b) Project Outcomes Related to System Requirements and Implementation

List of Outcomes per System Requirement	
System Requirement	**Outcomes (Products, Features and Benchmarks)**
System Capability 1: The system must enable States to examine student progress and outcomes over time including students' preparation to meet the demands of postsecondary education, the 21st century workforce, and the Armed Forces. Such a system must include data at the individual student level from preschool through postsecondary education and into the workforce (e.g., employment, wage, and earnings information).	Products A more robust data warehouse (EdInsight) containing data from all the prescribed data sources. A SIS for students in state placement so they may be integrated into the SLDS and served more efficiently and effectively. Features Reports in EdInsight (data warehouse) available to all levels of the education community. Student-level information about points at which students exit, transfer in, transfer out, drop out or complete P-16 education programs and course credit completion federal reporting. PK-12 student level information for other federal reporting requirements. Benchmarks Expand use of unique identifier to include 13-16 by 2010. Expand EdInsight to include more comprehensive preschool data by 2014. Expand EdInsight to include more IWD data that will capture employment, wage, and earnings information by 2011. Integrate data from highly transient students who are in state placement into the SLDS.
System Capability 2: The system must facilitate and enable the exchange of data among agencies and institutions within the State and between States so that data may be used to inform policy and practice. Such a system would support interoperability by using standard data structures, data formats, and data definitions to ensure linkage and connectivity among the various levels and	Products Interoperability for all K-12 state education entities. Legal opinions on compliance with confidentiality and security statutes, especially FERPA. Support services for LEA information technology to learn SIF agent support. A Research Review Board. Third party security audit to ensure compliance and reassure stakeholders. Features SIF infrastructure in all LEAs and AEAs. Automated flow of reporting data. Research policies and protocols developed by the SLDS Steering Committee and approved by respective governing bodies. Research agenda developed by the SLDS Steering Committee and approved by respective governing bodies.

types of data.	Benchmarks Expand SIF initiative by implementing standard data structures, data formats, data load schedules, and data definitions to ensure linkage and connectivity beyond the current RFP pilot to all LEAs and AEAs by 2013. Student locator interoperability between four of the seven MEIC states and plans to expand to the remaining states by 2012 (K-12 initiative). Potentially leverage the e-transcript system communication capacity to provide the medium for interconnectivity between Regents and K-12 data.
System Capability 3: The system must link student data with teachers, i.e., it must enable the matching of teachers and students so that a given student may be matched with the particular teachers primarily responsible for providing instruction in various subjects.	Products Linking all the different data sets: teacher, student, and a bridging element provided by the LEA (e.g., schedules and transcripts). ETL of bridging element. Collection/data flow of bridging element (SIF modification). Features Reports in EdInsight (data warehouse) available to education community, including teacher impact on individual students with appropriate security access established in the security model. Benchmarks Create a linkage that will match students in grades P-8 with the teachers primarily responsible for their core instruction and match students in grades 9-12 with the teachers in each of their courses by 2013.
System capability 4: The system must enable the matching of teachers with information about their certification and teacher preparation programs, including the institutions at which the teachers receive their training.	Products Linking all the different data sets: teacher, Board of Educational Examiners (BOEE) teacher folder information. ETL of data. BOEE participation in e-transcript project to receive teacher preparation data electronically. BOEE data inclusion in SIF conversion. Features Reports in EdInsight (data warehouse) available to education community with appropriate security access established in the security model. BOEE teacher licensure application data electronically flowing from Iowa postsecondary institutions.

	Benchmarks Data on teachers, their licensure, and preparation programs integrated into the SLDS by 2012.
System Capability 5: The system must enable data to be easily generated for continuous improvement and decision-making, including timely reporting to parents, teachers, and school leaders on the achievement of their students.	Products Continual ETL to refresh data sets as required. Create portal in EdInsight for K-12 education community and postsecondary researchers consistent with policies and protocols developed by SLDS and approved by respective agencies. Create a portal for the public that is 508 Level I compliant. Features License (software access) and certify (data literacy training and testing) P-postsecondary researchers so that they have appropriate access to EdInsight. Timely data for decision making. Benchmarks Postsecondary access to EdInsight by 2012.
System Capability 6: The system must ensure the quality and integrity of data contained in the system.	Products Data audit protocol developed by SLDS Steering Committee and source system owners. Data audit procedure communicated to the field. EdInsight training developed and delivered; also curricula for training to various user groups developed for ongoing trainings. Data governance committee structure developed for all IDE source systems: process for defining and resolving conflicts over mutual data elements in agency's source collections. CurricUNET (curricula management and accreditation system) for the community college network in Iowa. Features Further data quality expectations communicated through the audit procedure and in turn communicated to the field. Sampling of source documentation as part of audit for validity testing. Data literacy training as part of gaining access to EdInsight. Consistency among mutual data elements in different IDE collections. Standardization of curricula content per course titles and numbering among community colleges using CurricUNET. Increased, systematized accreditation oversight of community college courses and series requirements by IDE's Division of Community Colleges and Workforce Preparation using CurricUNET. Standardized postsecondary program nomenclature using the Classification of Instructional Programs (CIP) codes.

	Any new collection comes with a set of data quality reports for validity auditing. Benchmarks Improved data quality – validity checks and feedback for improvement – by 2013. Statewide training on uses of data in EdInsight and materials for ongoing training of new users completed by 2013. Expand data governance to all the source systems the IDE collects by 2013. System in place to standardize community college curricula course content and numbering across the community college network, and thereby the data, by 2013.
Capability 7: The system must provide the State with the ability to meet reporting requirements of the Department, especially reporting progress on the metrics established for the State Fiscal Stabilization Fund (SFSF) and the reporting requirements included in the ED*Facts* data collection and reporting system.	Products New source systems for data not currently collected, but required by this initiative. A more robust data warehouse (EdInsight) containing data from all the prescribed data sources: ETL, data model, and data profiling. Process for defining new standard reports and ad hoc queries in EdInsight (data warehouse) and making those results and/or data available at the appropriate security level. Agreement on variable definitions: lowest performing schools, out-of-field teachers, etc. Public portal for reporting SFSF Phase II elements that require public transparency to the public. Features Reports in EdInsight (data warehouse) available to education community with appropriate security access established in the security model. Create a portal for the public that is 508 Level I compliant. Security model that ensures appropriate access to the data by a plethora of different users. ED*Facts* reporting straight out of EdInsight (expansion of NGA concept in current IES grant). Benchmarks Expand EdInsight to include district/building assignments of teachers, number of years of teaching, college degree/teaching endorsements by 2011. Identify additions necessary to the eScholar data model as well as additional existing data that can be loaded into the existing templates in the model. Identify where additional data elements exist or must be collected from. Design systems. Implement new source systems by 2013.
Element 1: A unique statewide	Products

student identifier that does not permit a student to be individually identified by users of the system (except as allowed by Federal and State law)	Electronic transcripts sent from Iowa secondary to Iowa postsecondary. Interface for Iowa postsecondary to IDE's unique student identifier application. Features A data element in the electronic transcript data set will be the Iowa unique identifier, obviously for those pupils that have graduated from an Iowa secondary education institution. Ability for Iowa postsecondary to receive a unique identifier from IDE's student identifier application for out-of-state students enrolling in Iowa postsecondary. Ability for Iowa postsecondary to query IDE's student identifier application for students enrolling from out-of-state secondary that at one time have had an Iowa unique identifier issued as a student in either elementary or secondary education in Iowa. Benchmarks The unique identifier has existed in P-12 data since 2004; this identifier will be carried forward into Iowa postsecondary in the fall of 2010 as a data element in the electronic transcript system; it is a legislative mandate in Iowa for postsecondary to have the element in their data systems. Batch claiming of students by Iowa postsecondary from IDE's unique student identifier application by fall of 2011. Interoperability between Iowa postsecondary data systems and IDE's unique student identifier application by spring of 2012. Automated data requests and processing from Iowa postsecondary data systems and IDE's unique student identifier application by September of 2013.
P-16 Student Level Data: Element 2: Student-level enrollment, demographic, and program participation information Element 3: Student-level information about the points at which students exit, transfer in, transfer out, drop out or complete P-16 education	Products A more robust data warehouse (EdInsight) containing data from all the prescribed data sources. A process and protocol for Iowa IHEs to use on reporting back to out-of-state secondary on enrollment. Features Reports in EdInsight (data warehouse) available to education community: • student-level information about points at which students exit, transfer in, transfer out, drop out or complete P-16 education programs; • Those that address students' needs for developmental course; • Those mandated by the United States Department of Education (USDE); • Those from the agreed LDS Steering Committee research agenda, and • Those to report back to out-of-state secondary on out-of-state postsecondary enrollees issued an Iowa unique

programs	identifier form eScholar. Benchmarks Student-level enrollment, demographic, and program participation information, including points at which students exit, transfer in, transfer out, drop out or complete these grades exist and are already loaded into EdInsight for P-12 data. E-transcript system flows unique identifier to participating postsecondary. A statewide exchange of data between public and participating private postsecondary institutions in Iowa through the National Clearinghouse by 2011 (allows for expedited collection of Element 3). Postsecondary access to the eScholar unique identifier in 2011 and automated in 2012. Expand EdInsight to include required postsecondary data by 2012.
Element 4: The capacity to communicate with higher education data systems	Products A phased implementation plan for sharing data between IDE and Regents. Integration of IDE's Division of Community Colleges and Workforce Preparation data into the K-12 data domain. Features Reports in EdInsight (data warehouse) available to education community: student-level information about points at which students exit, transfer in, transfer out, drop out or complete P-16 education programs. Potential future EdInsight reporting that examines preparation of Iowa students for postsecondary and preparation of Iowa's teachers. Community college data available in EdInsight for report design (Division of Community Colleges and Workforce Preparation integral part of process). Benchmarks A statewide exchange of data between public and participating private postsecondary institutions in Iowa through the National Clearinghouse by 2011 to address the specific elements in America Competes (students exit, transfer in, transfer out, drop out or complete P-16 education programs). Expansion of the current e-transcript infrastructure from public IHEs only to include private and for-profit postsecondary institutions in Iowa. Agreement to a process, which includes the technical and legal structure, to exchange data in an automated way for ongoing research and decision making that does not rely on an outside vendor by 2013. Agreement between IDE and Regents on a research agenda by 2012 to address Element 12. Re-engineering of underlying the Division of Community Colleges and Workforce Preparation's data architecture, including infrastructure, so the data model revolves around the individual student.

Element 5: A state data audit system assessing data quality, validity, and reliability	Products IDE will establish audit procedures for its collections: these would include sampling procedures of original documentation to assess validity. SLDS Steering Committee agrees upon audit protocol - areas, procedures and standards – between source data that come from different SLDS entities (agencies, etc.). Features Regular data quality audits of IDE data directed by the director of data quality. Trainings based on potential areas of improvements identified from analysis of audit results. Benchmarks Data audit process instituted by 2012. Process for integrating areas of improvement in data audit integrated into annual source system trainings (EASIER, BEDS, Certified Annual Report [CAR], etc).
Element 6: Yearly test records of individual students with respect to assessments under section 1111 (b) of the Elementary and Secondary Education Act of 1965	Done
Element 7: Information on students not tested, by grade and subject	In progress under current IES SLDS grant.
Element 8: A teacher identifier system with the ability to match teachers to students	This element is the same as system requirement System Capability 3: The system must link student data with teachers, i.e., it must enable the matching of teachers and students so that a given student may be matched with the particular teachers primarily responsible for providing instruction in various subjects. Please see that response.
Element 9: Student-level transcript information, including information on courses completed and grades earned.	Products The current IES grant includes resources for report development. A technology infrastructure to serve as the source system for IDE to maintain. The hardware and configuration of the e-transcript/student record exchange with the Iowa High School Transcript Repository.

	Features Reports in EdInsight (data warehouse) available to education community with appropriate security access established in the security model. Benchmarks Full implementation of the e-transcript system within the first six months of 2012. Expansion of the system to include private and for-profit postsecondary institutions in Iowa by mid-2013. The state of Iowa will be able to maintain its commitment to the first year of the implementation: $1 million. There has also been some support to maintain the licensing for e-transcripts and EdInsight through a $600,000 annual legislative appropriation. Thus the benchmark would be the annual Rebuild Iowa Infrastructure Fund (RIIF) appropriation: passed by the end of May and signed within 30 days of passage, each year. Senior Year Plus funds, a bill also included the legislative directive to create the system, were redirected to cover federal maintenance of effort requirements for school lunches and vocational rehabilitation.
Element 10: Student-level college readiness test scores	Products Research into predictive models for college readiness. State access to test specific ACT scores and the right to re-disclose. Features Findings on the correlation between ITP test scores and ACT test scores. A crosswalk between ACT and ITP test scores, which by extension allows the findings associated with the ACT to transitively be associated with the ITP scores. Benchmarks Initial research findings, with confirmatory findings, by 2011; peer review findings by 2012. Contract for ongoing costs associated with accessing the ACT scores by 2011.
Element 11: Data that provide information regarding the extent to which students transition successfully from secondary school to postsecondary education, including whether students enroll in remedial	Products Data from public and private Iowa IHEs that satisfy Elements 11 and 12. Research questions and research designs on mutual data elements agreed to by IDE and Regents. Commitment of participation by private and for-profit postsecondary. Features Requirements for future EdInsight reports that examines preparation of Iowa students for success in postsecondary

coursework	education and teacher preparation.
Element 12: Data that provide other information determined necessary to address alignment and adequate preparation for success in postsecondary education	Reports in EdInsight (data warehouse) available to education community with appropriate security access established in the security model. Benchmarks Agreement between IDE and Regents on a research agenda to address alignment and adequate preparation for success in postsecondary education by 2012. Agreement among IDE and all postsecondary institutions in Iowa on a research agenda to address alignment and adequate preparation for success in postsecondary education by 2013.

IDE, in conjunction with its SLDS partners, is appreciative of this grant opportunity and would use the funding to accomplish the previously described outcomes. The investment made by Iowa and the USDE through the 2009 IES grant have provided a foundationally solid SLDS. However, to successfully meet the explicit additional requirements of the SFSF, additional ARRA SLDS grant resources are needed.

c) Timeline for Project Outcomes

The following Gantt Chart from Microsoft Project presents the timeline for Iowa's proposed response to this RFA. The timeline also reflects the 2009 IES grant activities, and the activities Iowa has underway of its own volition. As the point has already been made, Iowa has an SLDS and is expanding it with 2009 IES grant funds in a way relatively consistent with the ARRA requirements. So, this request for funding is to fill the gaps between this reality and this grant's requirements and the other ARRA funding: SFSF and Race to the Top. Therefore, it makes sense to convey these together for that reason alone.

Another concern raised in the RFA is that these ARRA SLDS funds supplement, not supplant current efforts. It's a legitimate concern given the dire condition of states' budgets. Hence, setting the tasks out together further makes sense to ensure they are not duplicative. Additionally for the record, IDE is complying with the account coding necessary to track ARRA funds separately, and is one of the handful of states also subject to a Government Accountability Office (GAO) audit, a sample state, on the matter.

IDE only intends to keep this grant separate from an accounting aspect. For the SLDS to be a success, these activities must dovetail into a larger system. What funding source pays which bills will be kept separate and how this is accomplished will be noted in the project management section. In the Gantt Chart, the funding source, as well as who is accountable will be denoted. ARRA SLDS funded activities can be discerned by italic and underline font versus the regular Arial font for IES 2009 and Iowa funded activities.

<u>Multi-State Collaboration - MEIC Initiative:</u> States and school districts are required to comply with national standard graduation rates. Both the NGA and the National Graduation Cohort Analysis requires states to submit the graduation rates utilizing standard definitions. Each of these approaches requires LEAs and states to keep track of the students that are part of their annual graduation cohort. Most districts are only able to track students that are enrolled in another school in their state. School districts are penalized if they are unable to document that students have enrolled in another school. Federal guidance allows several forms of documentation, including whether the student has been reported as enrolled in a state longitudinal data system. School districts and states would benefit if they could track students that move to neighboring states.

Outcome: Interstate Student Locator Framework

Four states in the Midwest will create a mechanism for searching the student identifier databases in partner states to locate students they have "lost" and have been reported as dropouts. Missouri, Iowa, Nebraska and Kansas each have purchased the license to the eScholar UniqID product. Over the past seven years, these states have assigned student identifiers to all their K-12 students, none of which are duplicated within or between the states that use the eScholar product. The long-term goal of this Outcome is to track all students who move between states to provide a longitudinal inter-state education record. During this grant period, the goal is to locate students that have been reported as dropouts by districts, but have moved to one of the partner states.

With the support of the four participating states, eScholar will create an optional Interstate component that will offer ID Verification/Retrieval between participating states without direct login access to the other state systems. This process would allow states to perform an Interstate search manually by uploading files in their own Interstate component. The Interstate component would in turn submit the files for ID Verification/Retrieval to all of the participating states. The results from the participating states would be returned to the Interstate component and would allow an administrator to review additional data on the matched students.

- I.1 Work with partner states and eScholar to identify format and protocol for a student locator

framework (SLF) for the eScholar states. This collaboration will include the MEIC states that use eScholar's UniqID for students, including Kansas, Iowa, Nebraska, and Missouri. The work includes collaborating regarding the selection of students, data elements and standards, file specifications, schedule, and protocols for submitting to UniqID in partner states; as well as the protocol and agreements for retrieving and processing students who are "found." Note, that for this collaboration, each state will act as its own fiscal agent.

- I.2 Develop the student locator framework software.
- I.3 Identify ways to implement the SLF in non eScholar states.

This will include working with other MEIC states that do not use eScholar UniqID for students to determine how the SLF established in Activity 1 can be implemented in their environments. The work will include sharing the process documentation from Activity 1 and meeting with technical and leadership staff in all MEIC states in order to determine the applicability of the SLF to their environment, and to establish and document next steps. Note that for this collaboration each state will act as its own fiscal agent.

d) Project Management and Governance Plan

There are three divisions that form the operational core of the IDE: Division of PK-12 Education, Division of Community Colleges and Workforce Preparation, and Division of School Support and Information. Technically, there is also a Library Division and a Vocational Rehabilitation Division; however, these function relatively autonomously not falling under the ultimate control of the director. Functionally, Iowa's SLDS is located in the School Support and Information Division of IDE. As might be inferred from the division titles, this division generally houses all education activities that are not directly curriculum: research; information technology; finance policy; and health, nutrition, and transportation.

Contractually, the management controls are a documented process and a chain of command. Where vendors are involved, a work breakdown schedule with specific milestones is agreed upon with payment predicated on satisfactorily meeting the terms of the contract. Institutionally, the sign-off would come from the project co-chairs, then the division administrator, followed by IDE Internal Administrative Services contracting which provides additional review and oversight on technical accounting compliance.

Policy management controls are exercised through the SLDS Steering Committee. It is a venue for all entities that will include data in the system to discuss and come to agreement upon the issues at hand. The SLDS Steering Committee will be discussed in greater detail in the following subsection on Governance.

Operational control of the project will be managed through a traditional project management structure. As was eluded in contractual controls, Project Management Professional (PMP) certified project managers will be used to run project implementation using a PMBOK methodology. Compressed timelines require additional resources to produce deliverables quickly. Further, IDE's small information technology unit has the potential to incur RIFs thereby reducing that resource. The best model for this project would be to bring on short-term staff for additional reporting, ETL, and even augmentation of source systems. Without additional dedicated resources, any and all alterations to source systems may not get made due to shrinking state resources and priority realignments.

This approach unites proven business intelligence and data warehousing techniques with the project management guidelines adapted from the Project Management Institute's Guide to the PMBOK. PMBOK describes the following standard management processes for any project:

Initiating:	Identifying project requirements and authorizing the project phase.
Planning:	Defining objectives and selecting actionable tasks to attain the objectives.
Implementing:	Coordinating people and other resources to carry out the project.
Controlling:	Guiding to achieve project objectives by monitoring progress to identify variances from the plan so that corrective action can be taken when necessary.
Closing:	Formalizing acceptance of the project or phase.

This methodology will manage all activities (Statements of Work, Change Requests) authorized using the above standard practices. For each project/program phase, an initial Work Breakdown Structure (WBS) with appropriate plans – such as Scope Management, Costing, Project Management, and Resource and Risk Management Plans – will be created prior to any work being started.

In addition, the specific documents establish a foundation for each project that increases the probability of cost-effective execution and success. An example of these documents include: Resource Plan, Change Management Plan, Communication Plan, Implementation Plan, Risk Management Plan, and Quality Assurance Plan. This foundation is comprised of a clear designation of short- and long-term priorities, methodology tailored to the specific aspects of this project, a fully articulated process for project oversight

and timely executive decision making, the construction of a joint IDE and stakeholder team, and the implementation of a certified technical infrastructure.

GOVERNANCE

The governance of EdInsight proved to dovetail into the SLDS. Currently, a multi-tier governance structure is in process for SLDS, EdInsight, and agency specific data: it has been agreed to conceptually, but some details remain to be finalized. This multi-tier approach allows the discussion of specific issues with the appropriate audiences. That helps keep the communication process among the stakeholders iterative and ongoing because it is relevant. The four governance committees are steering, advisory, data governance, and project management. These committees support the entire SLDS in different ways: Steering directs; advisory shapes; data governance defines; and project management engineers. For a better understanding of their roles, each will be delineated. See Appendix A for a list of committee members, including agency affiliation.

SLDS Steering Committee: The objective of the Steering Committee is to keep the project on course to successful completion. Projects such as this that span multiple offices or programs within IDE create a natural complexity requiring direct discourse between senior leadership. Committee members are decision makers positioned to consider and resolve internal and external policy issues that surface as the project develops, and which go beyond the authority of the Project Management Team and the purview of IDE or any one entity. Currently, this committee includes members from partner agencies representing current or potential data sources: special education, ITP, AEAs, LEAs, Iowa Board of Regents, each Regent institution, community colleges, Board of Educational Examiners, Iowa Association of School Boards, Iowa State Education Association, Iowa Workforce Development, and ICSAC. As data are included from additional partner agencies, e.g., the Iowa Department of Human Services will begin to participate as their educational facilities for children in state placement data are brought into the SLDS. While not currently involved, representatives of private four-year postsecondary institutions will be added to this committee to meet the recent SFSF definition of institutions of higher education.

The Steering Committee serves to ensure that the project reflects the overall intent for data sharing in the four SFSF assurances, the objectives of the organizations contributing to the SLDS, including IDE's triumvirate vision set out at the beginning of the narrative taking into account the unique needs and challenges of individual programs and offices. It is the decision-making body regarding project data governance, acting upon the recommendations of the Data Governance Committee and the Research Review Board (RRB). The RRB will function similarly to an institutional review board in that it will review and approve research and data requests. Finally, the Steering Committee coordinates the implementation of separate but related projects that may share issues and resources, such as electronic transcripts and student record exchange. Each agency and entity involved is still obviously the ultimate authority on its internal data definitions and procedures.

EdInsight Advisory Committee: The Advisory Committee provides a practitioner's perspective to the design, architecture, and implementation of EdInsight, to ensure the project meets the needs of the clients. The group of subject matter experts, who were intentionally selected to represent various local and state stakeholder groups, provides granular input regarding the education systems data needs and feedback on EdInsight products. Members of the committee shape the project by collectively and individually lending their expertise to defining the content of EdInsight education data reports and its functionality. They interact directly with the Project Management Team and provide feedback from the field regarding project developments prior to their release. In addition to being a chief source of information in the requirements process, they serve as a test group for user acceptance testing and are key to delineating professional development for clients and local information technology support staff. They are lead by a member of the Project Management Team and generally work independently of the Steering Committee.

The Advisory Committee serves solely in an advisory capacity, and is not expected to be a decision-making body.

EdInsight and IDE Data Governance Committee: The Data Governance Committee serves as a separate and specialized advisory committee that currently only defines the IDE's approach to master data management. The Data Governance Committee creates its mission statement, goals, and objectives, which ultimately define the data culture of IDE. The chief role of the Data Governance Committee is to identify data issues and propose recommended solutions. Since it has no policy making authority, the Data Governance Committee provides recommendations needed to adopt policies that ensure the quality, availability, security, and usability of Iowa education data. The group is the subject matter authority regarding data definitions. The Data Governance Committee identifies the business rules required to make certain data are current, consistent, and accurate. It maintains a log of critical data issues, including their status and resolution and shares the updated list with the department appropriately.

The scope of the group initially is limited, but is planned to, and out of necessity, must expand its scope. Agreement among the three data sets included in EdInsight is the current focus. Plans are in motion to expand to other areas of IDE based on this successful implementation of data governance for EdInsight. Further, with the coming integration of postsecondary data into the SLDS, and other non-department data, into the K-12 analytical system, there will naturally be need to more explicitly define data elements for reporting.

Project Management Team: The Project Management Team oversees the day-to-day operations of the planning, design, production, and implementation of EdInsight. It has decision-making authority for all policy that is exclusive to project implementation and maintenance. It combines the talents and expertise of IDE and contractors to develop a project vision, plan, and accompanying foundation documents that direct the steps and processes needed to fulfill the project. The team functions as one unit to develop a detailed project plan and schedule that sets the pace of the project. It determines what resources are needed to complete tasks and provides the documentation of project work that allows the team to approve a task as satisfactorily completed.

The Project Management Team continuously evaluates the execution of the project, identifying potential risks to the project, and actions to mitigate them. The team engages both the Steering Committee and the Advisory Committee on a regular basis, and calls additional meetings of these groups as needed. Additionally, they refer data issues to the Data Governance Committee as they arise, and support the committee in developing a resolution. Ultimately, it is the responsibility of the Project Management Team to deliver. These staff would be utilized in conjunction with IDE project managers to oversee a scaled-up implementation of the Iowa's SLDS.

The Midwest Education Information Consortium (MEIC) four-state proposal does not hold the same risks as previous cross-state consortiums that have been proposed and failed. The financial management and interconnected participation of all players is not necessitated. MEICs goal is the construction of a cross-state automated student locator protocol and process, based on a functionality all states have in a product they own and/or in version upgrades they will own. In actuality, it would only require two of the four states to participate to pilot the concept. Further, some MEIC states with larger information staff may wish to engineer the process entirely in-house with existing resources. So the financing to capitalize on the student locator functionality is discreet by state as is the action to implement.

e) Staffing

IDE has assembled an outstanding dedicated team focused on success. IDE has positioned senior level personnel with experience deploying similar type systems in lead roles. All of the proposed personnel for this RFA worked together previously on the EdInsight project, a factor that will contribute to the success

of the current project and should instill confidence in IES. Resumes of the team are provided in Appendix A.

Additional resources would allow EdInsight to add more data sources, develop more reports, and expand the portal to accommodate the additional reporting capabilities thereby supporting continuous improvement within the Iowa education community. An infrastructure already exists as well as a knowledgeable core data warehouse project team committed to the report areas promised in the 2009 IES grant.

With the reduction in IDE information technology and research staff due to state budget cuts, there will be fewer specialized staff supporting the source systems that EdInsight draws its reports upon. Some of the potential reporting requirements asked for in the proposed SFSF rules would necessitate new source systems that require this very subject matter experts (SME) knowledge. The good news is IDE has an infrastructure and a knowledge base; and the ARRA postsecondary and expanded unique student identifier provide opportunities to covert the data flow of source systems into the eScholar templates the Cognos reporting in EdInsight is based upon; hence, implementing a new approach that will serve as a lifeline for some collections.

The expedited timeline of the SFSF and even this grant requires a larger labor force. The current staff have committed to integrating and reporting on the areas in Appendix A: reports generated with considerable field input on what they needed for continuous improvement. Also, the IES 2009 commits these staff to the new Iowa Core Curriculum, explicitly including end of course assessment, which supports the assessment assurance in the SFSF. The additional data to be included to satisfy the SFSF Assurances and America Competes Act requirements and reporting to be accomplished in the given time simply require more people.

IDE will use a project team composed of members with limited-term positions to build the system. The implementation will be guided by the permanent core team who will be able to maintain the system from the knowledge gained through the implementation. To direct the additional labor, the core IDE project team will provide the oversight and coordination function: temporary contract staff that comprise the labor force will work at the direction of IDE staff. Obviously, each project team member has experience in project management. Each team member has also received additional project management training within the last year provided through the Iowa Department of Administrative Services (IDAS) by a certified PMP. Some core project team staff will assume more explicit project management roles, while others would assume senior roles and be the first point of contact for clarification.

IDE will contract for this additional help through the Request for Services (RFS) approved by IDAS, where pre-qualified information technology companies submit names of qualified applicants in response to postings[5]. In certain instances formal RFPs would be let, such as the SIF RFP. In other instances for specialized, smaller scopes of work less than $50,000, such as general market research and specific client research with a deliverable of financial reports business requirements, a less formal RFP process is available and will be the approach used to fill these niche gaps.

This model will provide direct, ongoing oversight of the product deliverable. It is important to have state specific content knowledge when designing a system, as some of those data idiosyncrasies must be accounted for in delivering business intelligence reports. What may seem like insignificant, therefore unconfirmed, design specifications can lead to cost overruns: that is why direct control is necessary.

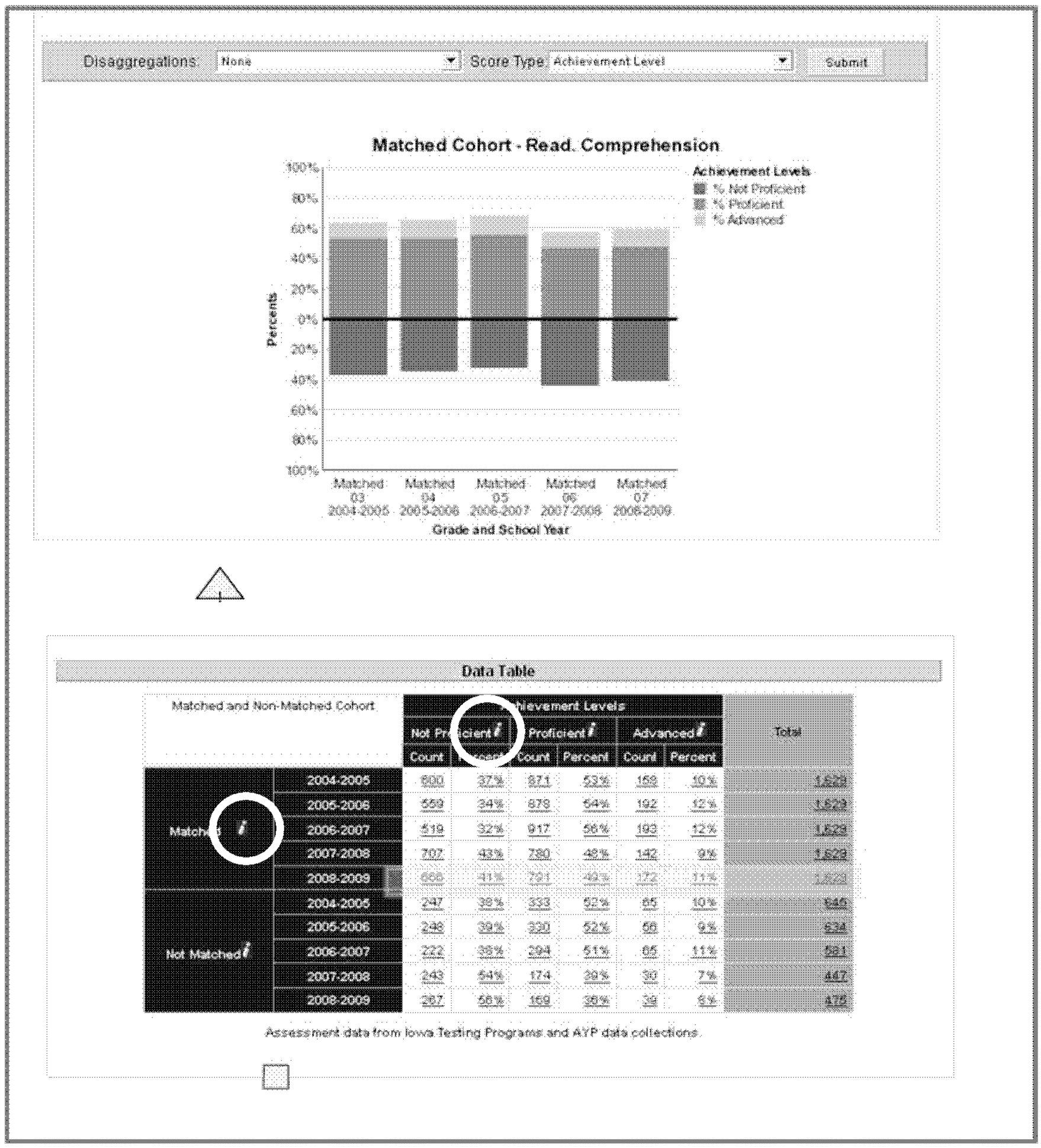
[5] An information technology specialist or education program consultant that is laid off could "bump" into a temporary contract programmer, provided that person had or could reasonably acquire that skill set with training.

Iowa Data Warehouse (EdInsight) Data Training

As it pertains to the Educational Data Warehouse, there are three primary methods to receive information about the data contained in a report.

1.) Tool Tips

Within each report, terms with an italicized 'i" enable the user to display a definition for the term when you mouse over the icon.



Below is an example of the actual script (between the quotes) that would appear when you mouseover:

```
toolTips["Matched"] = "A cohort containing students that have been present in
each of the consecutive years selected in the cohort time period.";

toolTips["Not Proficient"] = "NCLB performance category given to a student
scoring less than the 41st national percentile in Reading, Math or Science.";
```

2.) Report Definitions

In each Data Warehouse report are links to a Report Definition. For the Cohort Report above, the following is an example of the text for the Cohort Report Definition (please excuse the formatting).

ASMT 1.3 Cohort Report Definition

REPORT PURPOSE

Cohort Performance will identify the performance of a cohort group, based upon Iowa Test of Basic Skills (ITBS) or Iowa Test of Educational Development (ITED) National Percentile Rank (NPR), across a given grade, subject and time period.

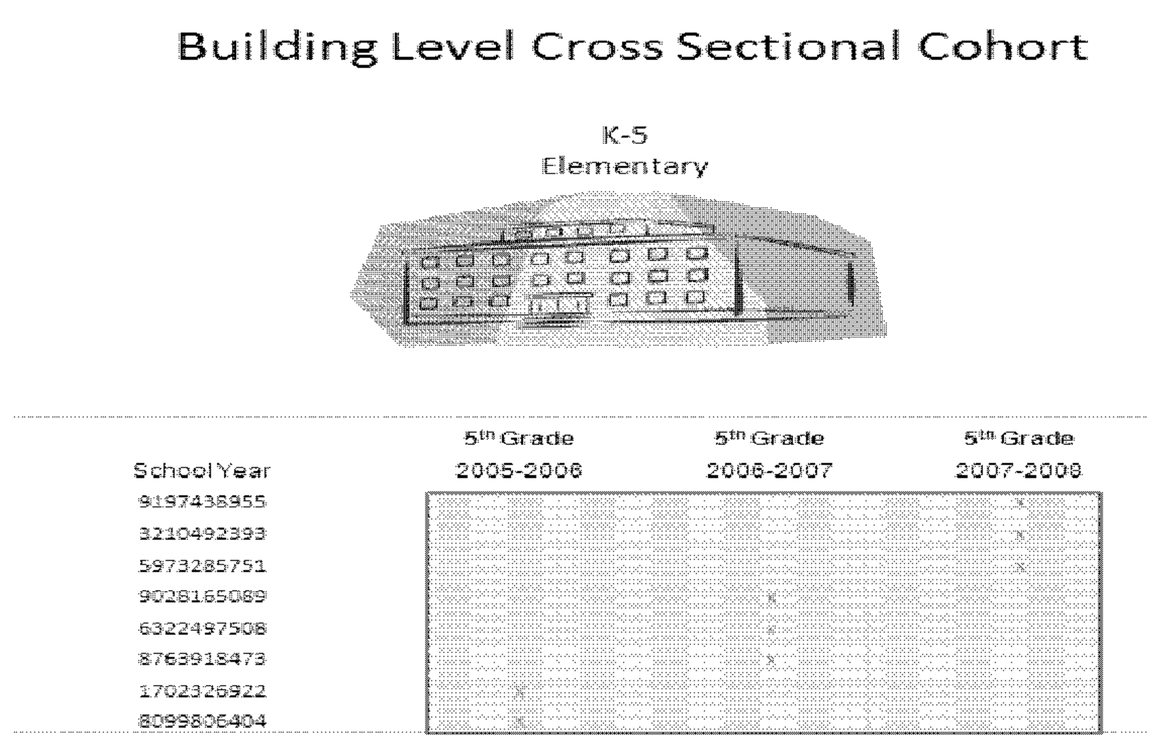
The Cohort graphic is a visual representation of the group's proficiency. For No Child Left Behind subjects, the graphic displays the distribution of students by proficiency level. For other subjects, the graphic represents the students above or below the 41st percentile.

By using '0' as the Y axis baseline, the user is able to make a very quick visual determination of the group's ITBS/ITED performance.

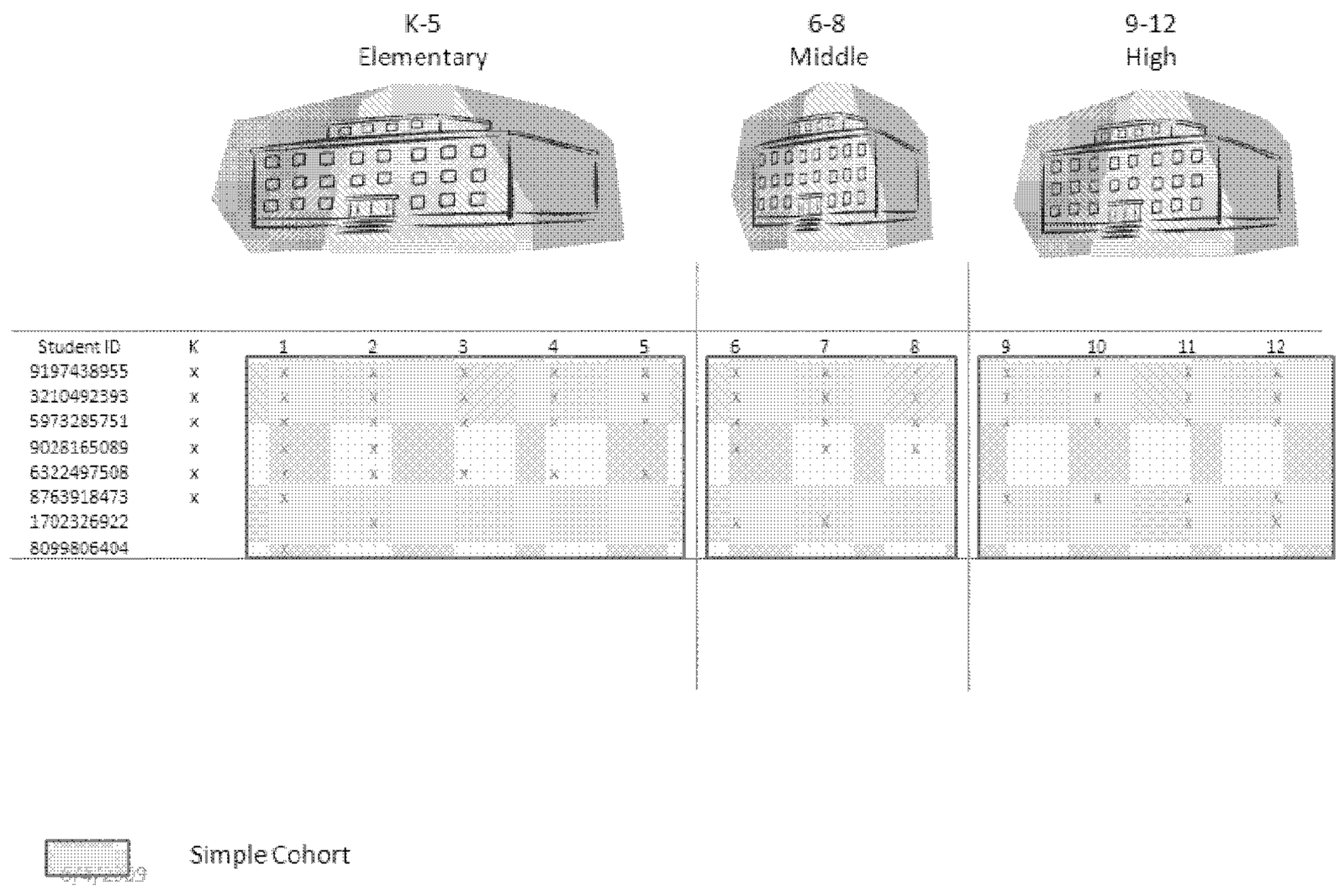
TYPES OF COHORTS

Three Cohort Report types are available in ASMT 1.3:

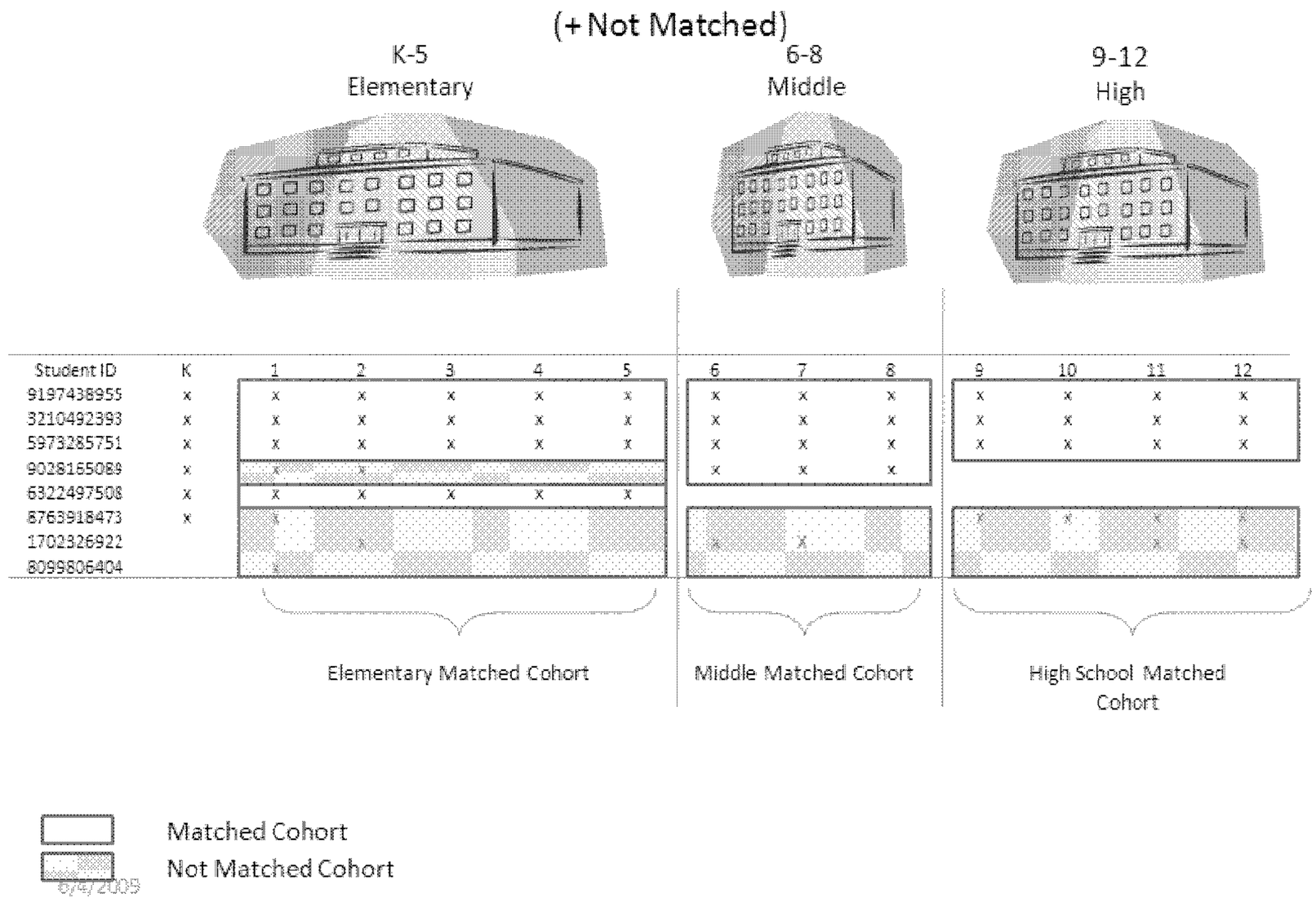
1. Cross Sectional – A Cross Sectional Cohort reports on the same grade over the selected time period.



2. Simple – A Simple Cohort reports on the performance of all students present for each of the years selected (including move ins and move outs).



3. Matched – A Matched Cohort is the same students who were present in each of the years selected. For example, a Matched Cohort is the same students from 3rd grade in 05-06, 4th grade in 06-07 and in 5th grade in 07-08. The Not Matched group describes the students who were NOT present for all of the years selected in the cohort. Providing both Matched and Not Matched counts allows the user to evaluate students that have been within your instruction for the time period, and for comparison, those students who have not.



In this example, the National Percentile Rank, summarized in proficiency levels and deciles would be displayed.

A WORD ON DISAGGREGATIONS

Viewing disaggregated data (eg: Gender, Free and Reduced Lunch) is a powerful way to evaluate the differences between variables. ASMT 1.3 disaggregates student data on a yearly basis. For instance, if a student had an IEP in years 1 and 2, but not in three, this would be reflected in the graphic and the data table. Current status is NOT retroactively applied. Because of this, you will notice that the student counts vary from year to year.

WHAT DATA ARE INCLUDED / WHAT DATA ARE EXCLUDED

This report is accessible only to those users granted access and only to those specific schools, districts or AEA's to which the user has been granted access.

Because EdInsight restricts access to data to specific buildings the user is associated with, Cohorts will span only the grade levels offered at a particular building. If the user selects grade levels that are not present, or extends the number of years back past the levels offered at the building, no results will be returned.

Data are available for:

- All public schools in the State of Iowa from School Year 2004-2005 to 2007-2008.

Data are NOT available for:

- School Years prior to 2004-2005
- Department of Corrections Facilities
- Non-Public Buildings

For data prior to this school year, please contact your school or Iowa Testing Programs (ITP).

Information found in this report originates from ITBS or ITED data. Student location and demographic values represent the information at the time of the test as reported from the bar code information or hand entered from the student at the time of the test. At year's end, student location and demographic information can change based on the data cleaning that occurs as part of the No Child Left Behind Adequate Yearly Progress (AYP) determinations. This cleansed version of demographic data is certified each summer by district superintendent or designee. This AYP version of student information is the system of record. If AYP determinations have not occurred in the current year, the bar code information is loaded directly into EdInsight from Iowa Testing Programs. Please note that information can vary for a given student or group in the current year due to the cleaning process of AYP.

HOW TO USE OR INTERPRET THIS REPORT

Matched Cohort enables you to evaluate the performance of students that have been under your instruction during the specified time period. Comparing Matched students to Not Matched allows you to compare the performance differential between the two groups.

Simple Cohorts enable you to make general performance observations over the entire class of students.

Cross Sectional Cohorts enable you to evaluate the performance of a given grade. This answers the question: How are we doing with the 5th grade class?

Deciles are the most accurate way to represent student performance distribution. Deciles divide students, by NPR, into ten equal increments (deciles) of performance. By indicating the count and percentage of students in each performance decile, users can clearly see where students exist in the performance ranges. Averages do not illustrate this concept with the same level of clarity. The user can observe that students perform at all performance ranges (deciles) where an average would imply that performance is centered in one particular performance area.

HOW *NOT* TO USE OR INTERPRET THIS REPORT

For a thorough explanation of appropriate and inappropriate uses of test scores, please consult the Iowa Tests *Interpretive Guide*.

EXPLANATION OF CALCULATIONS WITHIN THIS REPORT (if applicable)

No calculations are present in this report. Scores are displayed directly from the reported ITBS or ITED data.

EXPORT TO MICROSOFT EXCEL OR ADOBE READER

This report may be exported to Microsoft Excel or Adobe Reader using Cognos View options found in the upper right hand corner of the report display.

In some cases, Microsoft Internet Explorer may require modification to security settings to permit the Excel application to launch.

In Internet Explorer, select:

- 'Tools' from the menu bar
- Internet Options
- Security

- Highlight Local Intranet'
- After highlighting, click on sites
- In pop-up box, click on 'Advanced'
- Enter the EdInsight site into zone; Click 'Add'
- Click 'Ok'
- Close out browser
- Try exporting to excel

For additional assistance or concerns regarding this report, please contact edinsight@iowa.gov.

3.) Classroom Training

Each user of the Data Warehouse has had classroom training on data content, application and Cognos navigation prior to gaining access.

Classroom training uses real-world, but generic data to simulate real-world scenarios and application of the reports to answer questions and solve problems.

APPENDIX D

Appendix D

Attachment Title	Relevant Selection Criterion	Page #
IC* 272.2: Board of Examiners Created	(D)(1)(i)	Appendix D, page 1
IC 282—13.9: Issuance of Teacher Licenses and Endorsements	(D)(1)(i)	Appendix D, page 4
IAC 281—77**: Standards for Intern Teacher Preparation Program	(D)(1)(i)	Appendix D, page 30
Educational Examiners Board [282] Notice of Intended Action	(D)(1)(i)	Appendix D, page 36
Shortage Areas, 2008–2010	(D)(1)(iii)	Appendix D, page 37
IC 281—83.4 Iowa teaching standards and criteria.	(D)(2)(ii)	Appendix D, page 38
IC 281—83.10(284A) Iowa school leadership standards and criteria for administrators.	(D)(2)(ii)	Appendix D, page 42
IC 279.19 Probationary period.	(D)(2)(iv)(c)	Appendix D, page 44
IC 279.24 Contract with administrators - automatic continuation or termination.	(D)(2)(iv)(c)	Appendix D, page 45
Title II A (§1112(C)(1)(I) Regulatory Guidance	(D)(3)(i)	Appendix D, page 48
Talent to Teach, Lead and Change: Project TQ(3)	(D)(3)(ii)	Appendix D, page 51
The Iowa Professional Development Model: Training Manual	(D)(5)(i)	Appendix D, page 52
The Iowa Professional Development Model: Operating Principles	(D)(5)(i)	Appendix D, page 54
IC 284.5 Beginning teacher mentoring and induction program.	(D)(5)(i)	Appendix D, page 55
IC 284A.5 Beginning administrator mentoring and induction program.	(D)(5)(i)	Appendix D, page 57
Assessment *for* Learning	(D)(5)(i)	Appendix D, page 58
Summary, Improving School Leadership: The Promise of a Cohesive Leadership System	(D)(5)(i)	Appendix D, page 61
Project Narrative: State of Iowa Teacher Quality Partnership Grant	(D)(5)(i)	Appendix D, page 71

*IC refers to the Iowa Code.
**IAC refers to the Iowa Administrative Code.

272.2 Board of examiners created.

The board of educational examiners is created to exercise the exclusive authority to:

1. *a.* License practitioners, which includes the authority to establish criteria for the licenses; establish issuance and renewal requirements; create application and renewal forms; create licenses that authorize different instructional functions or specialties; develop a code of professional rights and responsibilities, practices, and ethics, which shall, among other things, address the failure of a practitioner to fulfill contractual obligations under section 279.13; and develop any other classifications, distinctions, and procedures which may be necessary to exercise licensing duties. In addressing the failure of a practitioner to fulfill contractual obligations, the board shall consider factors beyond the practitioner's control.

b. Notwithstanding section 272.28, subsection 1, a teacher shall be licensed in accordance with rules adopted pursuant to chapter 272, Code 2001, if the teacher successfully completes a beginning teacher mentoring program approved pursuant to chapter 256E, Code 2001, on or before June 30, 2002, or is employed by a school district that does not offer a beginning teacher mentoring and induction program approved in accordance with this chapter during the school year beginning July 1, 2001.

2. Establish, collect, and refund fees for a license.

3. Enter into reciprocity agreements with other equivalent state boards or a national certification board to provide for licensing of applicants from other states or nations.

4. Enforce rules adopted by the board through revocation or suspension of a license, or by other disciplinary action against a practitioner or professional development program licensed by the board of educational examiners. The board shall designate who may or shall initiate a licensee disciplinary investigation and a licensee disciplinary proceeding, and who shall prosecute a disciplinary proceeding and under what conditions, and shall state the procedures for review by the board of findings of fact if a majority of the board does not hear the disciplinary proceeding. However, in a case alleging failure of a practitioner to fulfill contractual obligations, the person who files a complaint with the board, or the complainant's designee, shall represent the complainant in a disciplinary hearing conducted in accordance with this chapter.

5. Apply for and receive federal or other funds on behalf of the state for purposes related to its duties.

6. Evaluate and conduct studies of board standards.

7. Hire an executive director, legal counsel, and other personnel and control the personnel administration of persons employed by the board.

8. Hear appeals regarding application, renewal, suspension, or revocation of a license. Board action is final agency action for purposes of chapter 17A.

9. Establish standards for the determination of whether an applicant is qualified to perform the duties required for a given license.

10. Issue statements of professional recognition to school service personnel who have attained a minimum of a baccalaureate degree and who are licensed by another professional licensing board.

11. Make recommendations to the state board of education concerning standards for the approval of professional development programs.

12. Establish, under chapter 17A, rules necessary to carry out board duties, and establish a budget request.

13. Adopt rules to provide for nontraditional preparation options for licensing persons who hold a bachelor's degree from an accredited college or university, who do not meet other requirements for licensure.

14. Adopt rules to determine whether an applicant is qualified to perform the duties for which a license is sought. The rules shall include all of the following:

a. The board may deny a license to or revoke the license of a person upon the board's finding by a preponderance of evidence that either the person has been convicted of a crime or that there has been a founded report of child abuse against the person. Rules adopted in accordance with this paragraph shall provide that in determining whether a person should be denied a license or that a practitioner's license should be revoked, the board shall consider the nature and seriousness of the founded abuse or crime in relation to the position sought, the time elapsed since the crime was committed, the degree of rehabilitation which has taken place since the incidence of founded abuse or the commission of the crime, the likelihood that the person will commit the same abuse or crime again, and the number of founded abuses committed by or criminal convictions of the person involved.

b. Notwithstanding paragraph *"a"*, the rules shall require the board to disqualify an applicant for a license or to revoke the license of a person for any of the following reasons:

(1) The person entered a plea of guilty to, or has been found guilty of, any of the following offenses established pursuant to Iowa law or offenses of a similar nature established under the laws of any other state or of the United States, or any other country, whether or not a sentence is imposed:

(a) Any of the following forcible felonies included in section 702.11: child endangerment, assault, murder, sexual abuse, or kidnapping.

(b) Any of the following sexual abuse offenses, as provided in chapter 709, involving a child:

(i) First, second, or third degree sexual abuse committed on or with a person who is under the age of eighteen years.

(ii) Lascivious acts with a child.

(iii) Detention in a brothel.

(iv) Assault with intent to commit sexual abuse.

(v) Indecent contact with a child.

(vi) Sexual exploitation by a counselor.

(vii) Lascivious conduct with a minor.

(viii) Sexual exploitation by a school employee.

(c) Incest involving a child under section 726.2.

(d) Dissemination and exhibition of obscene material to minors under section 728.2.

(e) Telephone dissemination of obscene material to minors under section 728.15.

(2) The applicant is less than twenty-one years of age except as provided in section 272.31, subsection 1, paragraph *"e"*. However, a student enrolled in a practitioner preparation program who meets board requirements for a temporary, limited-purpose license who is seeking to teach as part of a practicum or internship may be less than twenty-one years of age.

(3) The applicant's application is fraudulent.

(4) The applicant's license or certification from another state is suspended or revoked.

(5) The applicant fails to meet board standards for application for an initial or renewed license.

c. Qualifications or criteria for the granting or revocation of a license or the determination of an individual's professional standing shall not include membership or nonmembership in any teachers' organization.

d. An applicant for a license or certificate under this chapter shall demonstrate that the requirements of the license or certificate have been met and the burden of proof shall be on the applicant.

15. Adopt rules that require specificity in written complaints that are filed by individuals who have personal knowledge of an alleged violation and which are accepted by the board, provide that the jurisdictional requirements as set by the board in administrative rule are met on the face of the complaint before initiating an investigation of allegations, provide that any investigation be limited to the allegations contained on the face of the complaint, provide for an adequate interval between the receipt of a complaint and public notice of the complaint, permit parties to a complaint to mutually agree to a resolution of the complaint filed with the board, allow the respondent the right to review any investigative report upon a finding of probable cause for further action by the board, require that the conduct providing the basis for the complaint occurred within three years of discovery of the event by the complainant unless good cause can be shown for an extension of this limitation, and require complaints to be resolved within one hundred eighty days unless good cause can be shown for an extension of this limitation.

16. Adopt criteria for administrative endorsements that allow a person to achieve the endorsement authorizing the person to serve as an elementary or secondary principal without regard to the grade level at which the person accrued teaching experience.

17. Adopt rules to require that a background investigation be conducted by the division of criminal investigation of the department of public safety on all initial applicants for licensure. The board shall also require all initial applicants to submit a completed fingerprint packet and shall use the packet to facilitate a national criminal history background check. The board shall have access to, and shall review the sex offender registry information under section 692A.13, the central registry for child abuse information established under chapter 235A, and the dependent adult abuse records maintained under chapter 235B for information regarding applicants for license renewal.

[C97, §2629; S13, §2629; C24, 27, 31, §3863; C35, §3858-e1; C39, §**3858.1;** C46, 50, 54, 58, 62, 66, 71, 73, 75, 77, 79, 81, §260.2]

86 Acts, ch 1245, §1442; 89 Acts, ch 265, §2; 90 Acts, ch 1249, §5, 6

C93, §272.2

96 Acts, ch 1189, §1; 96 Acts, ch 1215, §46; 2001 Acts, ch 103, §1; 2001 Acts, ch 161, §15, 16; 2001 Acts, ch 177, §13, 15; 2002 Acts, ch 1084, §1; 2002 Acts, ch 1128, §1; 2003 Acts, ch 108, §48; 2003 Acts, ch 180, §14, 15; 2006 Acts, ch 1152, §9; 2007 Acts, ch 108, §9; 2008 Acts, ch 1008, §2

Subsection 1, paragraph a amended

CHAPTER 13
ISSUANCE OF TEACHER LICENSES AND ENDORSEMENTS

[Prior to 1/14/09, see Educational Examiners Board[282] Ch 14]

282—13.1(272) All applicants desiring Iowa licensure. Licenses are issued upon application filed on a form provided by the board of educational examiners and upon completion of the following:

13.1(1) *National criminal history background check.* An initial applicant will be required to submit a completed fingerprint packet that accompanies the application to facilitate a national criminal history background check. The fee for the evaluation of the fingerprint packet will be assessed to the applicant.

13.1(2) *Iowa division of criminal investigation background check.* An Iowa division of criminal investigation background check will be conducted on initial applicants. The fee for the evaluation of the DCI background check will be assessed to the applicant.

13.1(3) *Temporary permits.* The executive director may issue a temporary permit to an applicant for any type of license, certification, or authorization issued by the board, after receipt of a fully completed application, including certification from the applicant of completion of the Praxis II examination, if required; determination that the applicant meets all applicable prerequisites for issuance of the license, certification, or authorization; and satisfactory evaluation of the Iowa criminal history background check. The temporary permit shall serve as evidence of the applicant's authorization to hold a position in Iowa schools, pending the satisfactory completion of the national criminal history background check and the board's receipt of verification of completion of the Praxis II examination. The temporary permit shall expire upon issuance of the requested license, certification, or authorization or 90 days from the date of issuance of the permit, whichever occurs first, unless the temporary permit is extended upon a finding of good cause by the executive director.

282—13.2(272) Applicants from recognized Iowa institutions. An applicant for initial licensure shall complete either the teacher, administrator, or school service personnel preparation program from a recognized Iowa institution or an alternative program recognized by the Iowa board of educational examiners. A recognized Iowa institution is one which has its program of preparation approved by the state board of education according to standards established by said board, or an alternative program recognized by the state board of educational examiners. Applicants shall complete the requirements set out in rule 282—13.1(272) and shall also have the recommendation for the specific license and endorsement(s) or the specific endorsement(s) from the designated recommending official at the recognized education institution where the preparation was completed.

282—13.3(272) Applicants from recognized non-Iowa institutions. An applicant for initial licensure who completes the teacher, administrator, or school service personnel preparation program from a recognized non-Iowa institution shall verify the requirements of either subrule 13.18(4) or 13.18(5).

13.3(1) Requirements for an alternative preparation license for out-of-state candidates. An applicant who holds a valid license from another state and whose preparation was completed through a state-approved alternative teacher preparation program must:

a. Hold a baccalaureate degree with a minimum cumulative grade point average of 2.50 on a 4.0 scale from a regionally accredited institution.

b. Provide a valid out-of-state teaching license based on a state-approved alternative preparation program.

c. Provide a recommendation from a regionally accredited institution, department of education, or a state's standards board indicating the completion of an approved alternative teacher preparation program.

d. Provide an official institutional transcript(s) to be analyzed for the requirements necessary for full Iowa licensure based on 13.9(4)*"a"*(1) to (7) and 13.9(4)*"c"*(1) to (5).

e. If the applicant has completed fewer than three years of teaching experience, provide verification from the state licensing agency/department in the state where the alternative preparation program was completed indicating that the applicant has successfully passed that state's mandated tests.

f. Verify three years of teaching experience, which will waive the student teaching requirement.

13.3(2) A recognized non-Iowa teacher preparation institution is one that is state-approved and is accredited by the regional accrediting agency for the territory in which the institution is located.
[**ARC 8139B**, IAB 9/9/09, effective 10/14/09]

282—13.4(272) Applicants from foreign institutions. An applicant for initial licensure whose preparation was completed in a foreign institution must obtain a course-by-course credential evaluation report completed by one of the board-approved credential evaluation services and then file this report with the board of educational examiners for a determination of eligibility for licensure.

282—13.5(272) Teacher licenses. A license may be issued to applicants who fulfill the general requirements set out in subrule 13.5(1) and the specific requirements set out for each license.

13.5(1) *General requirements.* The applicant shall:

a. Have a baccalaureate degree from a regionally accredited institution.

b. Have completed a state-approved teacher education program which meets the requirements of the professional education core.

c. Have completed an approved human relations component.

d. Have completed the exceptional learner component.

e. Have completed the requirements for one of the basic teaching endorsements.

f. Meet the recency requirement of subrule 13.10(3).

13.5(2) *Renewal requirements.* Renewal requirements for teacher licenses are set out in 282—Chapter 20.

282—13.6(272) Specific requirements for an initial license. An initial license valid for two years may be issued to an applicant who meets the general requirements set forth in subrule 13.5(1).

282—13.7(272) Specific requirements for a standard license. A standard license valid for five years may be issued to an applicant who:

1. Meets the general requirements set forth in subrule 13.5(1), and
2. Shows evidence of successful completion of a state-approved mentoring and induction program by meeting the Iowa teaching standards as determined by a comprehensive evaluation and two years' successful teaching experience. In lieu of completion of an Iowa state-approved mentoring and induction program, the applicant must provide evidence of three years' successful teaching experience in an Iowa nonpublic school or three years' successful teaching experience in an out-of-state K-12 educational setting.

282—13.8(272) Specific requirements for a master educator's license. A master educator's license is valid for five years and may be issued to an applicant who:

1. Is the holder of or is eligible for a standard license as set out in rule 282—13.7(272), and
2. Verifies five years of successful teaching experience, and
3. Completes one of the following options:

- Master's degree in a recognized endorsement area, or
- Master's degree in curriculum, effective teaching, or a similar degree program which has a focus on school curriculum or instruction.

282—13.9(272) Teacher intern license.

13.9(1) *Authorization.* The teacher intern is authorized to teach in grades 7 to 12.

13.9(2) *Term.* The term of the teacher intern license will be one year from the date of issuance. This license is nonrenewable. The fee for the teacher intern license is in 282—Chapter 12.

13.9(3) *Teacher intern requirements.* A teacher intern license shall be issued upon application provided that the following requirements have been met. The applicant shall:

a. Hold a baccalaureate degree with a minimum cumulative grade point average of 2.50 on a 4.0 scale from a regionally accredited institution.

b. Meet the requirements of at least one of the board's secondary (5-12) teaching endorsements listed in rule 282—13.28(272).

c. Possess a minimum of three years of postbaccalaureate work experience. An authorized official at a college or university with an approved teacher intern program will evaluate this experience.

d. Successfully complete the teacher intern program requirements listed in subrule 13.9(4) and approved by the state board of education.

e. Successfully pass a basic skills test at the level approved by the teacher education institution.

13.9(4) *Program requirements.* The teacher intern shall:

a. Complete the following requirements prior to the internship year:

(1) Learning environment/classroom management. The intern uses an understanding of individual and group motivation and behavior to create a learning environment that encourages positive social interaction, active engagement in learning, and self-motivation.

(2) Instructional planning. The intern plans instruction based upon knowledge of subject matter, students, the community, curriculum goals, and state curriculum models.

(3) Instructional strategies. The intern understands and uses a variety of instructional strategies to encourage students' development of critical thinking, problem solving, and performance skills.

(4) Student learning. The intern understands how students learn and develop and provides learning opportunities that support intellectual, career, social, and personal development.

(5) Diverse learners. The intern understands how students differ in their approaches to learning and creates instructional opportunities that are equitable and are adaptable to diverse learners.

(6) Collaboration, ethics and relationships. The intern fosters relationships with parents, school colleagues, and organizations in the larger community to support students' learning and development.

(7) Assessment. The intern understands and uses formal and informal assessment strategies to evaluate the continuous intellectual, social, and physical development of the learner.

(8) Field experiences that provide opportunities for interaction with students in an environment that supports learning in context. These experiences shall total at least 50 contact hours in the field prior to the beginning of the academic year of the candidate's initial employment as a teacher intern.

b. Complete four semester hours of a teacher intern seminar during the teacher internship year to include support and extension of coursework from the teacher intern program.

c. Complete the coursework and competencies in the following areas:

(1) Foundations, reflection, and professional development. The intern continually evaluates the effects of the practitioner's choices and actions on students, parents, and other professionals in the learning community and actively seeks out opportunities to grow professionally.

(2) Communication. The intern uses knowledge of effective verbal, nonverbal, and media communication techniques, and other forms of symbolic representation, to foster active inquiry and collaboration and to support interaction in the classroom.

(3) Exceptional learner program, which must include preparation that contributes to the education of individuals with disabilities and the gifted and talented.

(4) Preparation in the integration of reading strategies into the content area.

(5) Computer technology related to instruction.

(6) An advanced study of the items set forth in 13.9(4)*"a"*(1) to (7) above.

13.9(5) *Local school district requirements.* The local school district shall:

a. Provide an offer of employment to an individual who has been evaluated by a college or university for eligibility or acceptance in the teacher intern program.

b. Participate in a mentoring and induction program.

c. Provide a district mentor for the teacher intern.

d. Provide other support and supervision, as needed, to maximize the opportunity for the teacher intern to succeed.

e. Not overload the teacher intern with extracurricular duties not directly related to the teacher intern's teaching assignment.

f. Provide evidence to the board from a licensed evaluator that the teacher intern is participating in a mentoring and induction program.

g. At the board's request, provide information including, but not limited to, the teacher intern selection and preparation program, institutional support, local school district mentor, and local school district support.

13.9(6) *Requirements to convert the teacher intern license to the initial license.*

a. An initial license shall be issued upon application provided that the teacher intern has met all of the following requirements:

(1) Successful completion of the coursework and competencies in the teacher intern program approved by the state board of education.

(2) Verification from a licensed evaluator that the teacher intern served successfully for a minimum of 160 days.

(3) Verification from a licensed evaluator that the teacher intern is participating in a mentoring and induction program and is being assessed on the Iowa teaching standards.

(4) Recommendation by a college or university offering an approved teacher intern program that the individual is eligible for an initial license.

(5) At the board's request, the teacher intern shall provide to the board information including, but not limited to, the teacher intern selection and preparation program, institutional support, local school district mentor, and local school district support.

b. The teacher intern year will count as one of the years that is needed for the teacher intern to convert the initial license to the standard license if the conditions listed in paragraph 13.9(6)*"a"* have been met.

13.9(7) *Requirements to obtain the initial license if the teacher intern does not complete the internship year.* An initial license shall be issued upon application provided that the teacher intern has met all of the following requirements:

a. Successful completion of the coursework and competencies in the teacher intern program approved by the state board of education.

b. Verification by a college or university that the teacher intern successfully completed the college's or university's state-approved student teaching requirements.

c. Recommendation by a college or university offering an approved teacher intern program that the individual is eligible for an initial license.

d. At the board's request, the teacher intern shall provide to the board information including, but not limited to, the teacher intern selection and preparation program, institutional support, local school district mentor, and local school district support.

282—13.10(272) Specific requirements for a Class A license. A nonrenewable Class A license valid for one year may be issued to an individual who has completed a teacher education program under any one of the following conditions:

13.10(1) *Professional core requirements.* The individual has not completed all of the required courses in the professional core, 13.18(4)*"a"* through *"j."*

13.10(2) *Human relations component.* The individual has not completed an approved human relations component.

13.10(3) *Recency.* The individual meets the requirements for a valid license, but has had fewer than 160 days of teaching experience during the five-year period immediately preceding the date of application or has not completed six semester hours of college credit from a recognized institution within the five-year period. To obtain the desired license, the applicant must complete recent credits and, where recent credits are required, these credits shall be taken in professional education or in the applicant's endorsement area(s).

13.10(4) *Degree not granted until next regular commencement.* Rescinded IAB 9/9/09, effective 10/14/09.

13.10(5) *Based on an expired Iowa certificate or license, exclusive of a Class A or Class B license.* The holder of an expired license, exclusive of a Class A or Class B license, shall be eligible to receive a Class A license upon application. This license shall be endorsed for the type of service authorized by the expired license on which it is based.

13.10(6) *Based on a mentoring and induction program.* An applicant may be eligible for a Class A license if the school district, after conducting a comprehensive evaluation, recommends and verifies that the applicant shall participate in the mentoring program for a third year.

13.10(7) *Based on an administrative decision.* The executive director is authorized to issue a Class A license to an applicant whose services are needed to fill positions in unique need circumstances.
[**ARC 7987B**, IAB 7/29/09, effective 9/2/09; **ARC 8134B**, IAB 9/9/09, effective 10/14/09]

282—13.11(272) Specific requirements for a Class B license. A Class B license, which is valid for two years and which is nonrenewable, may be issued to an individual under the following conditions:

13.11(1) *Endorsement in progress.* The individual has a valid license and one or more endorsements, but is seeking to obtain some other endorsement. A Class B license may be issued if requested by an employer and if the individual seeking to obtain some other endorsement has completed at least two-thirds of the requirements, or one-half of the content requirements in a state-designated shortage area, leading to completion of all requirements for the endorsement.

13.11(2) *Program of study for special education endorsement.* The college or university must outline the program of study necessary to meet the special education endorsement requirements. This program of study must be attached to the application.

13.11(3) *Request for exception.* A school district administrator may file a written request with the board for an exception to the minimum content requirements on the basis of documented need and benefit to the instructional program. The board will review the request and provide a written decision either approving or denying the request.

13.11(4) *Provisional occupational license.* If an individual is eligible for a provisional occupational license but has not met all of the experience requirements, a Class B license may be issued while the individual earns the necessary experience.

13.11(5) *Expiration.* This license will expire on June 30 of the fiscal year in which it was issued plus one year.
[**ARC 7987B**, IAB 7/29/09, effective 9/2/09; **ARC 8133B**, IAB 9/9/09, effective 10/14/09]

282—13.12(272) Specific requirements for a Class C license. Rescinded IAB 7/29/09, effective 9/2/09.

282—13.13(272) Specific requirements for a Class D occupational license. Rescinded IAB 7/29/09, effective 9/2/09.

282—13.14(272) Specific requirements for a Class E license. A nonrenewable license valid for one year may be issued to an individual as follows:

13.14(1) *Expired license.* Based on an expired Class A, Class B, or teacher exchange license, the holder of the expired license shall be eligible to receive a Class E license upon application and submission of all required materials.

13.14(2) *Application.* The application process will require transcripts of coursework completed during the term of the expired license, a program of study indicating the coursework necessary to obtain full licensure, and registration for coursework to be completed during the term of the Class E license. The Class E license will be denied if the applicant has not completed any coursework during the term of the Class A or Class B license unless extenuating circumstances are verified.
[**ARC 7987B**, IAB 7/29/09, effective 9/2/09]

282—13.15(272) Specific requirements for a Class G license. A nonrenewable Class G license valid for one year may be issued to an individual who must complete a school guidance counseling practicum or internship in an approved program in preparation for the school guidance counselor endorsement. The Class G license may be issued under the following limited conditions:

1. Verification of a baccalaureate degree from a regionally accredited institution.
2. Verification from the institution that the individual is admitted and enrolled in an approved school guidance counseling program.

3. Verification that the individual has completed the coursework and competencies required prior to the practicum or internship.

4. Written documentation of the requirements listed in "1" to "3" above, provided by the official at the institution where the individual is completing the approved school guidance counseling program and forwarded to the Iowa board of educational examiners with the application form for licensure.

282—13.16(272) Specific requirements for a substitute teacher's license.

13.16(1) *Substitute teacher requirements.* A substitute teacher's license may be issued to an individual who:

a. Has been the holder of, or presently holds, a license in Iowa; or holds or held a regular teacher's license or certificate in another state, exclusive of temporary, emergency, or substitute certificate or license, or a certificate based on an alternative certification program; or

b. Has successfully completed all requirements of an approved teacher education program and is eligible for the initial license, but has not applied for and been issued this license, or who meets all requirements for the initial license with the exception of the degree but whose degree will be granted at the next regular commencement; or

c. Has successfully completed all requirements of an approved Iowa teacher education program, but did not apply for an Iowa teacher's license at the time of completion of the approved program.

13.16(2) *Validity.* A substitute license is valid for five years and for not more than 90 days of teaching in one assignment during any one school year. A school district administrator may file a written request with the board for an extension of the 90-day limit in one assignment on the basis of documented need and benefit to the instructional program. The board will review the request and provide a written decision either approving or denying the request.

13.16(3) *Authorization.* The holder of a substitute license is authorized to teach in any school system in any position in which a regularly licensed teacher was employed to begin the school year. In addition to the authority inherent in the initial, standard, master educator, professional administrator, two-year exchange, and permanent professional licenses and the endorsement(s) held, the holder of one of these regular licenses may substitute on the same basis as the holder of a substitute license while the regular license is in effect.

282—13.17(272) Specific requirements for exchange licenses. An applicant seeking Iowa licensure who completes the teacher preparation program from a recognized non-Iowa institution shall verify the requirements of subrules 13.18(4) and 13.18(5) through traditional course-based preparation program and transcript review. A recognized non-Iowa teacher preparation institution is one that is state-approved and is accredited by the regional accrediting agency for the territory in which the institution is located.

13.17(1) *One-year teacher exchange license.*

a. A one-year nonrenewable exchange license may be issued to an applicant under the following conditions:

(1) The applicant has completed a state-approved, regionally accredited teacher education program; and

(2) The applicant has the recommendation for the specific license and endorsement(s) from the designated recommending official at the recognized non-Iowa institution where the preparation was completed; and

(3) The applicant holds and submits a copy of a valid regular certificate or license in the state in which the preparation was completed, exclusive of a temporary, emergency or substitute license or certificate; and

(4) If the applicant has fewer than three years of teaching experience or is being recommended for a K-6 elementary education endorsement, the applicant must verify successful completion of mandated tests in the state in which the applicant is currently licensed; and

(5) Each exchange license shall be limited to the area(s) and level(s) of instruction as determined by an analysis of the application, the transcripts and the license or certificate held in the state in which the basic preparation for licensure was completed or of the application and the credential evaluation report.

The applicant must have completed at least 50 percent of the endorsement requirements through a two- or four-year institution in order for the endorsement to be included on the exchange license; and

(6) The applicant is not subject to any pending disciplinary proceedings in any state or country; and

(7) The applicant complies with all requirements with regard to application processes and payment of licensure fees.

b. After the term of the exchange license has expired, the applicant may apply to be fully licensed if the applicant has completed all requirements and is eligible for full licensure.

13.17(2) *Two-year nonrenewable school counseling exchange license.*

a. A two-year nonrenewable school counseling exchange license may be issued to an individual, provided that the individual:

(1) Has completed a regionally accredited master's degree program in school guidance counseling.

(2) Holds a valid school counseling certificate or license issued by an examining board which issues certificates or licenses based on requirements which are substantially equivalent to those of the board of educational examiners.

(3) Meets the qualifications in Iowa Code section 272.6.

(4) Is not subject to any pending disciplinary proceeding in any state.

b. Each exchange license shall be limited to the area(s) and level(s) of counseling as determined by an analysis of the application, the transcripts, and the license or certificate held in the state in which the basic preparation for the school counseling license was completed.

c. Each applicant for the exchange license shall comply with all requirements with regard to application processes and payment of licensure fees.

d. Each individual receiving the two-year exchange license must complete any identified licensure deficiencies in order to be eligible for a regular educational license in Iowa.

e. Individuals licensed under this provision are subject to the administrative rules of the board.

13.17(3) *International teacher exchange license.*

a. A nonrenewable international exchange license may be issued to an applicant under the following conditions:

(1) The applicant has completed a teacher education program in another country; and

(2) The applicant is not subject to any pending disciplinary proceedings in any state or country; and

(3) The applicant complies with all requirements with regard to application processes and payment of licensure fees; and

(4) The applicant is a participant in a teacher exchange program administered through the Iowa department of education.

b. Each exchange license shall be limited to the area(s) and level(s) of instruction as determined by an analysis of the application and the credential evaluation report.

c. This license shall not exceed three years.

d. After the term of the exchange license has expired, the applicant may apply to be fully licensed if the applicant has completed all requirements and is eligible for full licensure.

[**ARC 8138B**, IAB 9/9/09, effective 10/14/09]

282—13.18(272) General requirements for an original teaching subject area endorsement. Following are the general requirements for the issuance of a license with an endorsement.

13.18(1) Baccalaureate degree from a regionally accredited institution.

13.18(2) Completion of an approved human relations component.

13.18(3) Completion of the exceptional learner program, which must include preparation that contributes to the education of individuals with disabilities and the gifted and talented.

13.18(4) Professional education core. Completed coursework or evidence of competency in:

a. Student learning. The practitioner understands how students learn and develop, and provides learning opportunities that support intellectual, career, social and personal development.

b. Diverse learners. The practitioner understands how students differ in their approaches to learning and creates instructional opportunities that are equitable and are adaptable to diverse learners.

c. Instructional planning. The practitioner plans instruction based upon knowledge of subject matter, students, the community, curriculum goals, and state curriculum models.

d. Instructional strategies. The practitioner understands and uses a variety of instructional strategies to encourage students' development of critical thinking, problem solving, and performance skills.

e. Learning environment/classroom management. The practitioner uses an understanding of individual and group motivation and behavior to create a learning environment that encourages positive social interaction, active engagement in learning, and self-motivation.

f. Communication. The practitioner uses knowledge of effective verbal, nonverbal, and media communication techniques, and other forms of symbolic representation, to foster active inquiry, collaboration, and support interaction in the classroom.

g. Assessment. The practitioner understands and uses formal and informal assessment strategies to evaluate the continuous intellectual, social, and physical development of the learner.

h. Foundations, reflection and professional development. The practitioner continually evaluates the effects of the practitioner's choices and actions on students, parents, and other professionals in the learning community, and actively seeks out opportunities to grow professionally.

i. Collaboration, ethics and relationships. The practitioner fosters relationships with parents, school colleagues, and organizations in the larger community to support students' learning and development.

j. Computer technology related to instruction.

k. Completion of pre-student teaching field-based experiences.

l. Methods of teaching with an emphasis on the subject and grade level endorsement desired.

m. Student teaching in the subject area and grade level endorsement desired.

n. Preparation in reading programs, including reading recovery, and integration of reading strategies into content area methods coursework.

13.18(5) Content/subject matter specialization. The practitioner understands the central concepts, tools of inquiry, and structure of the discipline(s) the practitioner teaches and creates learning experiences that make these aspects of subject matter meaningful for students. This is evidenced by completion of a 30-semester-hour teaching major which must minimally include the requirements for at least one of the basic endorsement areas, special education teaching endorsements, or secondary level occupational endorsements.

282—13.19(272) NCATE-accredited programs. Rescinded IAB 6/17/09, effective 7/22/09.

282—13.20 Reserved.

282—13.21(272) Human relations requirements for practitioner licensure. Preparation in human relations shall be included in programs leading to teacher licensure. Human relations study shall include interpersonal and intergroup relations and shall contribute to the development of sensitivity to and understanding of the values, beliefs, lifestyles and attitudes of individuals and the diverse groups found in a pluralistic society.

13.21(1) Beginning on or after August 31, 1980, each applicant for an initial practitioner's license shall have completed the human relations requirement.

13.21(2) On or after August 31, 1980, each applicant for the renewal of a practitioner's license shall have completed an approved human relations requirement.

13.21(3) Credit for the human relations requirement shall be given for licensed persons who can give evidence that they have completed a human relations program which meets board of educational examiners criteria (see rule 282—13.24(272)).

282—13.22(272) Development of human relations components. Human relations components shall be developed by teacher preparation institutions. In-service human relations components may also be

developed by educational agencies other than teacher preparation institutions, as approved by the board of educational examiners.

13.22(1) *Advisory committee.* Education agencies developing human relations components shall give evidence that in the development of their programs they were assisted by an advisory committee. The advisory committee shall consist of equal representation of various minority and majority groups.

13.22(2) *Standards for approved components.* Human relations components will be approved by the board of educational examiners upon submission of evidence that the components are designed to develop the ability of participants to:

a. Be aware of and understand the values, lifestyles, history, and contributions of various identifiable subgroups in our society.

b. Recognize and deal with dehumanizing biases such as sexism, racism, prejudice, and discrimination and become aware of the impact that such biases have on interpersonal relations.

c. Translate knowledge of human relations into attitudes, skills, and techniques which will result in favorable learning experiences for students.

d. Recognize the ways in which dehumanizing biases may be reflected in instructional materials.

e. Respect human diversity and the rights of each individual.

f. Relate effectively to other individuals and various subgroups other than one's own.

13.22(3) *Evaluation.* Educational agencies providing the human relations components shall indicate the means to be utilized for evaluation.

282—13.23 to **13.25** Reserved.

282—13.26(272) Requirements for elementary endorsements.

13.26(1) *Teacher—prekindergarten-kindergarten.*

a. *Authorization.* The holder of this endorsement is authorized to teach at the prekindergarten/kindergarten level.

b. *Program requirements.*

(1) Degree—baccalaureate, and

(2) Completion of an approved human relations program, and

(3) Completion of the professional education core. See subrule 13.18(3).

c. *Content.*

(1) Human growth and development: infancy and early childhood, unless completed as part of the professional education core. See subrule 13.18(4).

(2) Curriculum development and methodology for young children.

(3) Child-family-school-community relationships (community agencies).

(4) Guidance of young children three to six years of age.

(5) Organization of prekindergarten-kindergarten programs.

(6) Child and family nutrition.

(7) Language development and learning.

(8) Kindergarten: programs and curriculum development.

13.26(2) *Teacher—prekindergarten through grade three.*

a. *Authorization.* The holder of this endorsement is authorized to teach children from birth through grade three.

b. *Program requirements.*

(1) Degree—baccalaureate.

(2) Completion of an approved human relations program.

(3) Completion of the professional education core. See subrules 13.18(3) and 13.18(4).

(4) Highly qualified teacher (HQT) status. Applicants from non-Iowa institutions who have completed the requirements for this endorsement must verify their HQT status. The board shall determine the test and the minimum passing score for HQT status. Verification must be provided through one of the following:

1. Written verification from the department of education in the state in which the applicant completed the elementary teacher preparation program that the applicant has achieved HQT status in that state; or

2. Written verification from the department of education in the state where the applicant is currently teaching that the applicant has achieved HQT status in that state; or

3. Submission of the official test score report indicating the applicant has met the qualifying score for licensure in the state in which the applicant completed the elementary teacher preparation program; or

4. Obtaining the qualifying score set by the Iowa board of educational examiners if the applicant has not been teaching within the last five years and completion of a teacher preparation program prior to enactment of the federal highly qualified teacher legislation (June 2006). This option may also be utilized by applicants from outside the United States.

5. For applicants who have completed the requirements for one of the Iowa elementary endorsements, verification of HQT status by meeting the minimum score set by the Iowa board of educational examiners if the applicant has not been teaching within the last five years and completion of a teacher preparation program prior to enactment of the federal highly qualified teacher legislation (June 2006). This option may also be utilized by applicants who have been teaching outside the United States.

c. Content.

(1) Child growth and development with emphasis on cognitive, language, physical, social, and emotional development, both typical and atypical, for infants and toddlers, preprimary, and primary school children (grades one through three), unless combined as part of the professional education core. See subrule 13.18(4) of the licensure rules for the professional core.

(2) Historical, philosophical, and social foundations of early childhood education.

(3) Developmentally appropriate curriculum with emphasis on integrated multicultural and nonsexist content including language, mathematics, science, social studies, health, safety, nutrition, visual and expressive arts, social skills, higher-thinking skills, and developmentally appropriate methodology, including adaptations for individual needs, for infants and toddlers, preprimary, and primary school children.

(4) Characteristics of play and creativity, and their contributions to the cognitive, language, physical, social and emotional development and learning of infants and toddlers, preprimary, and primary school children.

(5) Classroom organization and individual interactions to create positive learning environments for infants and toddlers, preprimary, and primary school children based on child development theory emphasizing guidance techniques.

(6) Observation and application of developmentally appropriate assessments for infants and toddlers, preprimary, and primary school children recognizing, referring, and making adaptations for children who are at risk or who have exceptional educational needs and talents.

(7) Home-school-community relationships and interactions designed to promote and support parent, family and community involvement, and interagency collaboration.

(8) Family systems, cultural diversity, and factors which place families at risk.

(9) Child and family health and nutrition.

(10) Advocacy, legislation, and public policy as they affect children and families.

(11) Administration of child care programs to include staff and program development and supervision and evaluation of support staff.

(12) Pre-student teaching field experience with three age levels in infant and toddler, preprimary, and primary programs, with no less than 100 clock hours, and in different settings, such as rural and urban, socioeconomic status, cultural diversity, program types, and program sponsorship.

(13) Student teaching experiences with two different age levels, one before kindergarten and one from kindergarten through grade three.

13.26(3) *Teacher—prekindergarten through grade three, including special education.*

a. Authorization. The holder of this endorsement is authorized to teach children from birth through grade three.

b. Program requirements.

(1) Degree—baccalaureate, and

(2) Completion of an approved human relations program, and

(3) Completion of the professional education core. See subrules 13.18(3) and 13.18(4).

(4) Highly qualified teacher (HQT) status. Applicants from non-Iowa institutions who have completed the requirements for this endorsement must verify their HQT status. The board shall determine the test and the minimum passing score for HQT status. Verification must be provided through one of the following:

1. Written verification from the department of education in the state in which the applicant completed the elementary teacher preparation program that the applicant has achieved HQT status in that state; or

2. Written verification from the department of education in the state where the applicant is currently teaching that the applicant has achieved HQT status in that state; or

3. Submission of the official test score report indicating the applicant has met the qualifying score for licensure in the state in which the applicant completed the elementary teacher preparation program; or

4. Obtaining the qualifying score set by the Iowa board of educational examiners if the applicant has not been teaching within the last five years and completion of a teacher preparation program prior to enactment of the federal highly qualified teacher legislation (June 2006). This option may also be utilized by applicants from outside the United States.

5. For applicants who have completed the requirements for one of the Iowa elementary endorsements, verification of HQT status by meeting the minimum score set by the Iowa board of educational examiners if the applicant has not been teaching within the last five years and completion of a teacher preparation program prior to enactment of the federal highly qualified teacher legislation (June 2006). This option may also be utilized by applicants who have been teaching outside the United States.

c. Content.

(1) Child growth and development.

1. Understand the nature of child growth and development for infants and toddlers (birth through age 2), preprimary (age 3 through age 5) and primary school children (age 6 through age 8), both typical and atypical, in areas of cognition, language development, physical motor, social-emotional, aesthetics, and adaptive behavior.

2. Understand individual differences in development and learning including risk factors, developmental variations and developmental patterns of specific disabilities and special abilities.

3. Recognize that children are best understood in the contexts of family, culture and society and that cultural and linguistic diversity influences development and learning.

(2) Developmentally appropriate learning environment and curriculum implementation.

1. Establish learning environments with social support, from the teacher and from other students, for all children to meet their optimal potential, with a climate characterized by mutual respect, encouraging and valuing the efforts of all regardless of proficiency.

2. Appropriately use informal and formal assessment to monitor development of children and to plan and evaluate curriculum and teaching practices to meet individual needs of children and families.

3. Plan, implement, and continuously evaluate developmentally and individually appropriate curriculum goals, content, and teaching practices for infants, toddlers, preprimary and primary children based on the needs and interests of individual children, their families and community.

4. Use both child-initiated and teacher-directed instructional methods, including strategies such as small and large group projects, unstructured and structured play, systematic instruction, group discussion and cooperative decision making.

5. Develop and implement integrated learning experiences for home-, center- and school-based environments for infants, toddlers, preprimary and primary children.

6. Develop and implement integrated learning experiences that facilitate cognition, communication, social and physical development of infants and toddlers within the context of parent-child and caregiver-child relationships.

7. Develop and implement learning experiences for preprimary and primary children with focus on multicultural and nonsexist content that includes development of responsibility, aesthetic and artistic development, physical development and well-being, cognitive development, and emotional and social development.

8. Develop and implement learning experiences for infants, toddlers, preprimary, and primary children with a focus on language, mathematics, science, social studies, visual and expressive arts, social skills, higher-thinking skills, and developmentally appropriate methodology.

9. Develop adaptations and accommodations for infants, toddlers, preprimary, and primary children to meet their individual needs.

10. Adapt materials, equipment, the environment, programs and use of human resources to meet social, cognitive, physical motor, communication, and medical needs of children and diverse learning needs.

(3) Health, safety and nutrition.

1. Design and implement physically and psychologically safe and healthy indoor and outdoor environments to promote development and learning.

2. Promote nutritional practices that support cognitive, social, cultural and physical development of young children.

3. Implement appropriate appraisal and management of health concerns of young children including procedures for children with special health care needs.

4. Recognize signs of emotional distress, physical and mental abuse and neglect in young children and understand mandatory reporting procedures.

5. Demonstrate proficiency in infant-child cardiopulmonary resuscitation, emergency procedures and first aid.

(4) Family and community collaboration.

1. Apply theories and knowledge of dynamic roles and relationships within and between families, schools, and communities.

2. Assist families in identifying resources, priorities, and concerns in relation to the child's development.

3. Link families, based on identified needs, priorities and concerns, with a variety of resources.

4. Use communication, problem-solving and help-giving skills in collaboration with families and other professionals to support the development, learning and well-being of young children.

5. Participate as an effective member of a team with other professionals and families to develop and implement learning plans and environments for young children.

(5) Professionalism.

1. Understand legislation and public policy that affect all young children, with and without disabilities, and their families.

2. Understand legal aspects, historical, philosophical, and social foundations of early childhood education and special education.

3. Understand principles of administration, organization and operation of programs for children from birth to age 8 and their families, including staff and program development, supervision and evaluation of staff, and continuing improvement of programs and services.

4. Identify current trends and issues of the profession to inform and improve practices and advocate for quality programs for young children and their families.

5. Adhere to professional and ethical codes.

6. Engage in reflective inquiry and demonstration of professional self-knowledge.

(6) Pre-student teaching field experiences. Complete 100 clock hours of pre-student teaching field experience with three age levels in infant and toddler, preprimary, and primary programs and in different settings, such as rural and urban, encompassing differing socioeconomic status, ability levels, cultural and linguistic diversity and program types and sponsorship.

(7) Student teaching. Complete a supervised student teaching experience of a total of at least 12 weeks in at least two different classrooms which include children with and without disabilities in two of three age levels: infant and toddler, preprimary, and primary.

13.26(4) *Teacher—elementary classroom.*

a. *Authorization.* The holder of this endorsement is authorized to teach in kindergarten and grades one through six.

b. *Program requirements.*

(1) Degree—baccalaureate, and

(2) Completion of an approved human relations component, and

(3) Completion of the professional education core. See subrules 13.18(3) and 13.18(4).

(4) Highly qualified teacher (HQT) status. Applicants from non-Iowa institutions who have completed the requirements for this endorsement must verify their HQT status. The board shall determine the test and the minimum passing score for HQT status. Verification must be provided through one of the following:

1. Written verification from the department of education in the state in which the applicant completed the elementary teacher preparation program that the applicant has achieved HQT status in that state; or

2. Written verification from the department of education in the state where the applicant is currently teaching that the applicant has achieved HQT status in that state; or

3. Submission of the official test score report indicating the applicant has met the qualifying score for licensure in the state in which the applicant completed the elementary teacher preparation program; or

4. Obtaining the qualifying score set by the Iowa board of educational examiners if the applicant has not been teaching within the last five years and completion of a teacher preparation program prior to enactment of the federal highly qualified teacher legislation (June 2006). This option may also be utilized by applicants from outside the United States.

5. For applicants who have completed the requirements for one of the Iowa elementary endorsements, verification of HQT status by meeting the minimum score set by the Iowa board of educational examiners if the applicant has not been teaching within the last five years and completion of a teacher preparation program prior to enactment of the federal highly qualified teacher legislation (June 2006). This option may also be utilized by applicants who have been teaching outside the United States.

c. *Content.*

(1) Child growth and development with emphasis on the emotional, physical and mental characteristics of elementary age children, unless completed as part of the professional education core. See subrule 13.18(4).

(2) Methods and materials of teaching elementary language arts.

(3) Methods and materials of teaching elementary reading.

(4) Elementary curriculum (methods and materials).

(5) Methods and materials of teaching elementary mathematics.

(6) Methods and materials of teaching elementary science.

(7) Children's literature.

(8) Methods and materials of teaching elementary social studies.

(9) Methods and materials in two of the following areas:

1. Methods and materials of teaching elementary health.

2. Methods and materials of teaching elementary physical education.

3. Methods and materials of teaching elementary art.

4. Methods and materials of teaching elementary music.

(10) Pre-student teaching field experience in at least two different grades.

(11) A field of specialization in a single discipline or a formal interdisciplinary program of at least 12 semester hours.

[**ARC 8400B**, IAB 12/16/09, effective 1/20/10; **ARC 8401B**, IAB 12/16/09, effective 1/20/10; **ARC 8402B**, IAB 12/16/09, effective 1/20/10]

282—13.27(272) Requirements for middle school endorsements.

13.27(1) *Authorization.* The holder of this endorsement is authorized to teach in the two concentration areas in which the specific requirements have been completed as well as in other subject areas in grades five through eight which are not the core content areas. The holder is not authorized to teach art, industrial arts, music, reading, physical education and special education.

13.27(2) *Program requirements.*

a. Be the holder of a currently valid Iowa teacher's license with either the general elementary endorsement or one of the subject matter secondary level endorsements set out in rule 282—13.28(272) or 282—subrules 17.1(1) and 17.1(3).

b. A minimum of 9 semester hours of required coursework in the following:

(1) Coursework in the growth and development of the middle school age child, specifically addressing the social, emotional, physical and cognitive characteristics and needs of middle school age children in addition to related studies completed as part of the professional education core in subrule 13.18(4).

(2) Coursework in middle school design, curriculum, instruction, and assessment including, but not limited to, interdisciplinary instruction, teaming, and differentiated instruction in addition to related studies completed as part of the professional education core in subrule 13.18(4).

(3) Coursework to prepare middle school teachers in literacy (reading, writing, listening and speaking) strategies for students in grades five through eight and in methods to include these strategies throughout the curriculum.

c. Thirty hours of middle school field experiences included in the coursework requirements listed in 13.27(2)*"b"*(1) to (3).

13.27(3) *Concentration areas.* To obtain this endorsement, the applicant must complete the coursework requirements in two of the following content areas:

a. *Social studies concentration.* The social studies concentration requires 12 semester hours of coursework in social studies to include coursework in United States history, world history, government and geography.

b. *Mathematics concentration.* The mathematics concentration requires 12 semester hours in mathematics to include coursework in algebra.

c. *Science concentration.* The science concentration requires 12 semester hours in science to include coursework in life science, earth science, and physical science.

d. *Language arts concentration.* The language arts concentration requires 12 semester hours in language arts to include coursework in composition, language usage, speech, young adult literature, and literature across cultures.

282—13.28(272) Minimum content requirements for teaching endorsements.

13.28(1) *Agriculture.* 5-12. Completion of 24 semester credit hours in agriculture and agriculture education to include:

a. Foundations of vocational and career education.

b. Planning and implementing courses and curriculum.

c. Methods and techniques of instruction to include evaluation of programs and students.

d. Coordination of cooperative education programs.

e. Coursework in each of the following areas and at least three semester credit hours in five of the following areas:

(1) Agribusiness systems.

(2) Power, structural, and technical systems.

(3) Plant systems.

(4) Animal systems.

(5) Natural resources systems.

(6) Environmental service systems.

(7) Food products and processing systems.

13.28(2) *Art.* K-8 or 5-12. Completion of 24 semester hours in art to include coursework in art history, studio art, and two- and three-dimensional art.

13.28(3) *Business—all.* 5-12. Completion of 30 semester hours in business to include 6 semester hours in accounting, 3 semester hours in business law to include contract law, 3 semester hours in computer and technical applications in business, 6 semester hours in marketing to include consumer studies, 3 semester hours in management, 6 semester hours in economics, and 3 semester hours in business communications to include formatting, language usage, and oral presentation. Coursework in entrepreneurship and in financial literacy may be a part of, or in addition to, the coursework listed above. Individuals who were licensed in Iowa prior to October 1, 1988, and were allowed to teach marketing without completing the endorsement requirements must complete the endorsement requirements by July 1, 2010, in order to teach or continue to teach marketing. A waiver provision is available through the board of educational examiners for individuals who have been successfully teaching marketing.

13.28(4) *Driver education.* 5-12. Completion of 9 semester hours in driver education to include coursework in accident prevention that includes drug and alcohol abuse; vehicle safety; and behind-the-wheel driving.

13.28(5) *English/language arts.*

a. *K-8.* Completion of 24 semester hours in English and language arts to include coursework in oral communication, written communication, language development, reading, children's literature, creative drama or oral interpretation of literature, and American literature.

b. *5-12.* Completion of 24 semester hours in English to include coursework in oral communication, written communication, language development, reading, American literature, English literature and adolescent literature.

13.28(6) *Language arts.* 5-12. Completion of 40 semester hours in language arts to include coursework in the following areas:

a. *Written communication.*

(1) Develops a wide range of strategies and appropriately uses writing process elements (e.g., brainstorming, free-writing, first draft, group response, continued drafting, editing, and self-reflection) to communicate with different audiences for a variety of purposes.

(2) Develops knowledge of language structure (e.g., grammar), language conventions (e.g., spelling and punctuation), media techniques, figurative language and genre to create, critique, and discuss print and nonprint texts.

b. *Oral communication.*

(1) Understands oral language, listening, and nonverbal communication skills; knows how to analyze communication interactions; and applies related knowledge and skills to teach students to become competent communicators in varied contexts.

(2) Understands the communication process and related theories, knows the purpose and function of communication and understands how to apply this knowledge to teach students to make appropriate and effective choices as senders and receivers of messages in varied contexts.

c. *Language development.*

(1) Understands inclusive and appropriate language, patterns and dialects across cultures, ethnic groups, geographic regions and social roles.

(2) Develops strategies to improve competency in the English language arts and understanding of content across the curriculum for students whose first language is not English.

d. *Young adult literature, American literature, and world literature.*

(1) Reads, comprehends, and analyzes a wide range of texts to build an understanding of self as well as the cultures of the United States and the world in order to acquire new information, to respond to the needs and demands of society and the workplace, and for personal fulfillment. Among these texts are fiction and nonfiction, graphic novels, classic and contemporary works, young adult literature, and nonprint texts.

(2) Reads a wide range of literature from many periods in many genres to build an understanding of the many dimensions (e.g., philosophical, ethical, aesthetic) of human experience.

(3) Applies a wide range of strategies to comprehend, interpret, evaluate, and appreciate texts. Draws on prior experience, interactions with other readers and writers, knowledge of word meaning and of other texts, word identification strategies, and an understanding of textual features (e.g., sound-letter correspondence, sentence structure, context, graphics).

(4) Participates as a knowledgeable, reflective, creative, and critical member of a variety of literacy communities.

e. Creative voice.

(1) Understands the art of oral interpretation and how to provide opportunities for students to develop and apply oral interpretation skills in individual and group performances for a variety of audiences, purposes and occasions.

(2) Understands the basic skills of theatre production including acting, stage movement, and basic stage design.

f. Argumentation/debate.

(1) Understands concepts and principles of classical and contemporary rhetoric and is able to plan, prepare, organize, deliver and evaluate speeches and presentations.

(2) Understands argumentation and debate and how to provide students with opportunities to apply skills and strategies for argumentation and debate in a variety of formats and contexts.

g. Journalism.

(1) Understands ethical standards and major legal issues including First Amendment rights and responsibilities relevant to varied communication content. Utilizes strategies to teach students about the importance of freedom of speech in a democratic society and the rights and responsibilities of communicators.

(2) Understands the writing process as it relates to journalism (e.g., brainstorming, questioning, reporting, gathering and synthesizing information, writing, editing, and evaluating the final media product).

(3) Understands a variety of forms of journalistic writing (e.g., news, sports, features, opinion, Web-based) and the appropriate styles (e.g., Associated Press, multiple sources with attribution, punctuation) and additional forms unique to journalism (e.g., headlines, cutlines, and/or visual presentations).

h. Mass media production.

(1) Understands the role of the media in a democracy and the importance of preserving that role.

(2) Understands how to interpret and analyze various types of mass media messages in order for students to become critical consumers.

(3) Develops the technological skills needed to package media products effectively using various forms of journalistic design with a range of visual and auditory methods.

i. Reading strategies (if not completed as part of the professional education core requirements).

(1) Uses a variety of skills and strategies to comprehend and interpret complex fiction, nonfiction and informational text.

(2) Reads for a variety of purposes and across content areas.

13.28(7) *Foreign language.* K-8 and 5-12. Completion of 24 semester hours in each foreign language for which endorsement is sought.

13.28(8) *Health.* K-8 and 5-12. Completion of 24 semester hours in health to include coursework in public or community health, consumer health, substance abuse, family life education, mental/emotional health, and human nutrition.

13.28(9) *Family and consumer sciences—general.* 5-12. Completion of 24 semester hours in family and consumer sciences to include coursework in human development, parenthood education, family studies, consumer resource management, textiles and apparel, housing, and foods and nutrition.

13.28(10) *Industrial technology.* 5-12. Completion of 24 semester hours in industrial technology to include coursework in manufacturing, construction, energy and power, graphic communications and transportation. The coursework is to include at least 6 semester hours in three different areas.

13.28(11) *Journalism.* 5-12. Completion of 15 semester hours in journalism to include coursework in writing, editing, production and visual communications.

13.28(12) *Mathematics.*

a. *K-8.* Completion of 24 semester hours in mathematics to include coursework in algebra, geometry, number theory, measurement, computer programming, and probability and statistics.

b. *5-12.* Completion of 24 semester hours in mathematics to include a linear algebra or an abstract (modern) algebra course, a geometry course, a two-course sequence in calculus, a computer programming course, a probability and statistics course, and coursework in discrete mathematics.

13.28(13) *Music.*

a. *K-8.* Completion of 24 semester hours in music to include coursework in music theory (at least two courses), music history, and applied music.

b. *5-12.* Completion of 24 semester hours in music to include coursework in music theory (at least two courses), music history (at least two courses), applied music, and conducting.

13.28(14) *Physical education.*

a. *K-8.* Completion of 24 semester hours in physical education to include coursework in human anatomy, human physiology, movement education, adapted physical education, physical education in the elementary school, human growth and development of children related to physical education, and first aid and emergency care.

b. *5-12.* Completion of 24 semester hours in physical education to include coursework in human anatomy, kinesiology, human physiology, human growth and development related to maturational and motor learning, adapted physical education, curriculum and administration of physical education, assessment processes in physical education, and first aid and emergency care.

13.28(15) *Reading.*

a. *K-8 requirements.* Completion of 24 semester hours in reading to include all of the following requirements:

(1) Foundations of reading. This requirement includes the following competencies:

1. The practitioner demonstrates knowledge of the psychological, sociocultural, and linguistic foundations of reading and writing processes and instruction.

2. The practitioner demonstrates knowledge of a range of research pertaining to reading, writing, and learning, including scientifically based reading research, and knowledge of histories of reading. The range of research encompasses research traditions from the fields of the social sciences and other paradigms appropriate for informing practice.

3. The practitioner demonstrates knowledge of the major components of reading, such as phonemic awareness, word identification, phonics, vocabulary, fluency, and comprehension, and effectively integrates curricular standards with student interests, motivation, and background knowledge.

(2) Reading in the content areas. This requirement includes the following competencies:

1. The practitioner demonstrates knowledge of text structure and the dimensions of content area vocabulary and comprehension, including literal, interpretive, critical, and evaluative.

2. The practitioner provides content area instruction in reading and writing that effectively uses a variety of research-based strategies and practices.

(3) Practicum. This requirement includes the following competencies:

1. The practitioner works with licensed professionals who observe, evaluate, and provide feedback on the practitioner's knowledge, dispositions, and performance of the teaching of reading and writing.

2. The practitioner effectively uses reading and writing strategies, materials, and assessments based upon appropriate reading and writing research and works with colleagues and families in the support of children's reading and writing development.

(4) Language development. This requirement includes the following competency: The practitioner uses knowledge of language development and acquisition of reading skills (birth through sixth grade), and the variations related to cultural and linguistic diversity to provide effective instruction in reading and writing.

(5) Oral communication. This requirement includes the following competencies:

1. The practitioner has knowledge of the unique needs and backgrounds of students with language differences and delays.

2. The practitioner uses effective strategies for facilitating the learning of Standard English by all learners.

(6) Written communication. This requirement includes the following competency: The practitioner uses knowledge of reading-writing-speaking connections; the writing process; the stages of spelling development; the different types of writing, such as narrative, expressive, persuasive, informational and descriptive; and the connections between oral and written language development to effectively teach writing as communication.

(7) Reading assessment, diagnosis and evaluation. This requirement includes the following competencies:

1. The practitioner uses knowledge of a variety of instruments, procedures, and practices that range from individual to group and from formal to informal to alternative for the identification of students' reading proficiencies and needs, for planning and revising instruction for all students, and for communicating the results of ongoing assessments to all stakeholders.

2. The practitioner demonstrates awareness of policies and procedures related to special programs, including Title I.

(8) Children's nonfiction and fiction. This requirement includes the following competency: The practitioner uses knowledge of children's literature for:

1. Modeling the reading and writing of varied genres, including fiction and nonfiction; technology- and media-based information; and nonprint materials;

2. Motivating through the use of texts at multiple levels, representing broad interests, and reflecting varied cultures, linguistic backgrounds, and perspectives; and

3. Matching text complexities to the proficiencies and needs of readers.

(9) Reading instructional strategies. This requirement includes the following competency: The practitioner uses knowledge of a range of research-based strategies and instructional technology for designing and delivering effective instruction across the curriculum, for grouping students, and for selecting materials appropriate for learners at various stages of reading and writing development and from varied cultural and linguistic backgrounds.

b. 5-12 requirements. Completion of 24 semester hours in reading to include all of the following requirements:

(1) Foundations of reading. This requirement includes the following competencies:

1. The practitioner demonstrates knowledge of the psychological, sociocultural, and linguistic foundations of reading and writing processes and instruction.

2. The practitioner demonstrates knowledge of a range of research pertaining to reading, writing, and learning, including scientifically based reading research, and knowledge of histories of reading. The range of research encompasses research traditions from the fields of the social sciences and other paradigms appropriate for informing practice.

3. The practitioner demonstrates knowledge of the major components of reading such as phonemic awareness, word identification, phonics, vocabulary, fluency, and comprehension, and integrates curricular standards with student interests, motivation, and background knowledge.

(2) Reading in the content areas. This requirement includes the following competencies:

1. The practitioner demonstrates knowledge of text structure and the dimensions of content area vocabulary and comprehension, including literal, interpretive, critical, and evaluative.

2. The practitioner provides content area instruction in reading and writing that effectively uses a variety of research-based strategies and practices.

(3) Practicum. This requirement includes the following competencies:

1. The practitioner works with licensed professionals who observe, evaluate, and provide feedback on the practitioner's knowledge, dispositions, and performance of the teaching of reading and writing.

2. The practitioner effectively uses reading and writing strategies, materials, and assessments based upon appropriate reading and writing research, and works with colleagues and families in the support of students' reading and writing development.

(4) Language development. This requirement includes the following competency: The practitioner uses knowledge of the relationship of language acquisition and language development with the

acquisition and development of reading skills, and the variations related to cultural and linguistic diversity to provide effective instruction in reading and writing.

(5) Oral communication. This requirement includes the following competency: The practitioner demonstrates knowledge of the unique needs and backgrounds of students with language differences and uses effective strategies for facilitating the learning of Standard English by all learners.

(6) Written communication. This requirement includes the following competency: The practitioner uses knowledge of reading-writing-speaking connections to teach the skills and processes necessary for writing narrative, expressive, persuasive, informational, and descriptive texts, including text structures and mechanics such as grammar, usage, and spelling.

(7) Reading assessment, diagnosis and evaluation. This requirement includes the following competencies:

1. The practitioner uses knowledge of a variety of instruments, procedures, and practices that range from individual to group and from formal to informal to alternative for the identification of students' reading proficiencies and needs, for planning and revising instruction for all students, and for communicating the results of ongoing assessments to all stakeholders.

2. The practitioner demonstrates awareness of policies and procedures related to special programs.

(8) Adolescent or young adult nonfiction and fiction. This requirement includes the following competency: The practitioner uses knowledge of adolescent or young adult literature for:

1. Modeling the reading and writing of varied genres, including fiction and nonfiction; technology and media-based information; and nonprint materials;

2. Motivating through the use of texts at multiple levels, representing broad interests, and reflecting varied cultures, linguistic backgrounds and perspectives; and

3. Matching text complexities to the proficiencies and needs of readers.

(9) Reading instructional strategies. This requirement includes the following competency: The practitioner uses knowledge of a range of research-based strategies and instructional technology for designing and delivering instruction across the curriculum, for grouping students, and for selecting materials appropriate for learners at various stages of reading and writing development and from varied cultural and linguistic backgrounds.

13.28(16) *Reading specialist.* K-12. The applicant must have met the requirements for the standard license and a teaching endorsement, and present evidence of at least one year of experience which included the teaching of reading as a significant part of the responsibility.

a. Authorization. The holder of this endorsement is authorized to serve as a reading specialist in kindergarten and grades one through twelve.

b. Program requirements. Degree—master's.

c. Content. Completion of a sequence of courses and experiences which may have been a part of, or in addition to, the degree requirements. This sequence is to be at least 27 semester hours to include the following:

(1) Educational psychology/human growth and development.
(2) Educational measurement and evaluation.
(3) Foundations of reading.
(4) Diagnosis of reading problems.
(5) Remedial reading.
(6) Psychology of reading.
(7) Language learning and reading disabilities.
(8) Practicum in reading.
(9) Administration and supervision of reading programs at the elementary and secondary levels.

13.28(17) *Science.*

a. Science—basic. K-8.

(1) Required coursework. Completion of at least 24 semester hours in science to include 12 hours in physical sciences, 6 hours in biology, and 6 hours in earth/space sciences.

(2) Competencies.

1. Understand the nature of scientific inquiry, its central role in science, and how to use the skills and processes of scientific inquiry.

2. Understand the fundamental facts and concepts in major science disciplines.

3. Be able to make conceptual connections within and across science disciplines, as well as to mathematics, technology, and other school subjects.

4. Be able to use scientific understanding when dealing with personal and societal issues.

b. *Biological science.* 5-12. Completion of 24 semester hours in biological science or 30 semester hours in the broad area of science to include 15 semester hours in biological science.

c. *Chemistry.* 5-12. Completion of 24 semester hours in chemistry or 30 semester hours in the broad area of science to include 15 semester hours in chemistry.

d. *Earth science.* 5-12. Completion of 24 semester hours in earth science or 30 semester hours in the broad area of science to include 15 semester hours in earth science.

e. *General science.* 5-12. Completion of 24 semester hours in science to include coursework in biological science, chemistry, and physics.

f. *Physical science.* 5-12. Completion of 24 semester hours in physical sciences to include coursework in physics, chemistry, and earth science.

g. *Physics.* 5-12. Completion of 24 semester hours in physics or 30 semester hours in the broad area of science to include 15 semester hours in physics.

h. *All science I.* 5-8. The holder of this endorsement must also hold the middle school endorsement listed under rule 282—13.27(272).

(1) Required coursework. Completion of at least 24 semester hours in science to include 6 hours in chemistry, 6 hours in physics or physical sciences, 6 hours in biology, and 6 hours in the earth/space sciences.

(2) Competencies.

1. Understand the nature of scientific inquiry, its central role in science, and how to use the skills and processes of scientific inquiry.

2. Understand the fundamental facts and concepts in major science disciplines.

3. Be able to make conceptual connections within and across science disciplines, as well as to mathematics, technology, and other school subjects.

4. Be able to use scientific understanding when dealing with personal and societal issues.

i. *All science II.* 9-12.

(1) Required coursework.

1. Completion of one of the following endorsement areas listed under subrule 13.28(17): biological science 5-12 or chemistry 5-12 or earth science 5-12 or physics 5-12.

2. Completion of at least 12 hours in each of the other three endorsement areas.

(2) Competencies.

1. Understand the nature of scientific inquiry, its central role in science, and how to use the skills and processes of scientific inquiry.

2. Understand the fundamental facts and concepts in major science disciplines.

3. Be able to make conceptual connections within and across science disciplines, as well as to mathematics, technology, and other school subjects.

4. Be able to use scientific understanding when dealing with personal and societal issues.

13.28(18) *Social sciences.*

a. *American government.* 5-12. Completion of 24 semester hours in American government or 30 semester hours in the broad area of social sciences to include 15 semester hours in American government.

b. *American history.* 5-12. Completion of 24 semester hours in American history or 30 semester hours in the broad area of social sciences to include 15 semester hours in American history.

c. *Anthropology.* 5-12. Completion of 24 semester hours in anthropology or 30 semester hours in the broad area of social sciences to include 15 semester hours in anthropology.

d. *Economics.* 5-12. Completion of 24 semester hours in economics or 30 semester hours in the broad area of social sciences to include 15 semester hours in economics, or 30 semester hours in the broad area of business to include 15 semester hours in economics.

e. *Geography.* 5-12. Completion of 24 semester hours in geography or 30 semester hours in the broad area of social sciences to include 15 semester hours in geography.

f. *History.* K-8. Completion of 24 semester hours in history to include at least 9 semester hours in American history and 9 semester hours in world history.

g. *Psychology.* 5-12. Completion of 24 semester hours in psychology or 30 semester hours in the broad area of social sciences to include 15 semester hours in psychology.

h. *Social studies.* K-8. Completion of 24 semester hours in social studies, to include coursework from at least three of these areas: history, sociology, economics, American government, psychology and geography.

i. *Sociology.* 5-12. Completion of 24 semester hours in sociology or 30 semester hours in the broad area of social sciences to include 15 semester hours in sociology.

j. *World history.* 5-12. Completion of 24 semester hours in world history or 30 semester hours in the broad area of social sciences to include 15 semester hours in world history.

k. *All social sciences.* 5-12. Completion of 51 semester hours in the social sciences to include 9 semester hours in each of American and world history, 9 semester hours in government, 6 semester hours in sociology, 6 semester hours in psychology other than educational psychology, 6 semester hours in geography, and 6 semester hours in economics.

13.28(19) *Speech communication/theatre.*

a. *K-8.* Completion of 20 semester hours in speech communication/theatre to include coursework in speech communication, creative drama or theatre, and oral interpretation.

b. *5-12.* Completion of 24 semester hours in speech communication/theatre to include coursework in speech communication, oral interpretation, creative drama or theatre, argumentation and debate, and mass media communication.

13.28(20) *English as a second language (ESL).* K-12.

a. *Authorization.* The holder of this endorsement is authorized to teach English as a second language in kindergarten and grades one through twelve.

b. *Program requirements.*

(1) Degree—baccalaureate, and

(2) Completion of an approved human relations program, and

(3) Completion of the professional education core. See subrules 13.18(3) and 13.18(4).

c. *Content.* Completion of 18 semester hours of coursework in English as a second language to include the following:

(1) Knowledge of pedagogy to include the following:

1. Methods and curriculum to include the following:

- Bilingual and ESL methods.
- Literacy in native and second language.
- Methods for subject matter content.
- Adaptation and modification of curriculum.

2. Assessment to include language proficiency and academic content.

(2) Knowledge of linguistics to include the following:

1. Psycholinguistics and sociolinguistics.
2. Language acquisition and proficiency to include the following:

- Knowledge of first and second language proficiency.
- Knowledge of first and second language acquisition.
- Language to include structure and grammar of English.

(3) Knowledge of cultural and linguistic diversity to include the following:

1. History.
2. Theory, models, and research.
3. Policy and legislation.

(4) Current issues with transient populations.

d. *Other.* Individuals who were licensed in Iowa prior to October 1, 1988, and were allowed to teach English as a second language without completing the endorsement requirements must complete

the endorsement requirements by July 1, 2012, in order to teach or continue to teach English as a second language. A waiver provision is available through the board of educational examiners for individuals who have been successfully teaching English as a second language.

13.28(21) *Elementary school teacher librarian.*

a. *Authorization.* The holder of this endorsement is authorized to serve as a teacher librarian in kindergarten and grades one through eight.

b. *Program requirements.*

(1) Degree—baccalaureate.

(2) Completion of an approved human relations program.

(3) Completion of the professional education core. See subrules 13.18(3) and 13.18(4).

c. *Content.* Completion of 24 semester hours in school library coursework to include the following:

(1) Knowledge of materials and literature in all formats for elementary children.

(2) Selection, utilization and evaluation of library resources and equipment.

(3) Design and production of instructional materials.

(4) Acquisition, cataloging and classification of library materials.

(5) Information literacy, reference services and networking.

(6) Planning, evaluation and administration of school library programs.

(7) Practicum in an elementary school media center/library.

13.28(22) *Secondary school teacher librarian.*

a. *Authorization.* The holder of this endorsement is authorized to serve as a teacher librarian in grades five through twelve.

b. *Program requirements.*

(1) Degree—baccalaureate.

(2) Completion of an approved human relations program.

(3) Completion of the professional education core. See subrules 13.18(3) and 13.18(4).

c. *Content.* Completion of 24 semester hours in school library coursework to include the following:

(1) Knowledge of materials and literature in all formats for adolescents.

(2) Selection, utilization and evaluation of library resources and equipment.

(3) Design and production of instructional materials.

(4) Acquisition, cataloging and classification of library materials.

(5) Information literacy, reference services and networking.

(6) Planning, evaluation and administration of school library programs.

(7) Practicum in a secondary school media center/library.

13.28(23) *School teacher librarian.* K-12.

a. *Authorization.* The holder of this endorsement is authorized to serve as a teacher librarian in kindergarten and grades one through twelve. The applicant must be the holder of or eligible for the initial license.

b. *Program requirements.* Degree—master's.

c. *Content.* Completion of a sequence of courses and experiences which may have been part of, or in addition to, the degree requirements. This sequence is to be at least 30 semester hours in school library coursework, to include the following:

(1) Planning, evaluation and administration of school library programs.

(2) Curriculum development and teaching and learning strategies.

(3) Instructional development and communication theory.

(4) Selection, evaluation and utilization of library resources and equipment.

(5) Acquisition, cataloging and classification of library materials.

(6) Design and production of instructional materials.

(7) Methods for instruction and integration of information literacy skills into the school curriculum.

(8) Information literacy, reference services and networking.

(9) Knowledge of materials and literature in all formats for elementary children and adolescents.

(10) Reading, listening and viewing guidance.
(11) Utilization and application of computer technology.
(12) Practicum at both the elementary and secondary levels.
(13) Research in library and information science.

13.28(24) *Talented and gifted teacher.*

a. Authorization. The holder of this endorsement is authorized to serve as a teacher or a coordinator of programs for the talented and gifted from the prekindergarten level through grade twelve. This authorization does not permit general classroom teaching at any level except that level or area for which the holder is eligible or holds the specific endorsement.

b. Program requirements—content. Completion of 12 undergraduate or graduate semester hours of coursework in the area of the talented and gifted to include the following:

(1) Psychology of the gifted.
1. Social needs.
2. Emotional needs.
(2) Programming for the gifted.
1. Prekindergarten-12 identification.
2. Differentiation strategies.
3. Collaborative teaching skills.
4. Program goals and performance measures.
5. Program evaluation.
(3) Practicum experience in gifted programs.

NOTE: Teachers in specific subject areas will not be required to hold this endorsement if they teach gifted students in their respective endorsement areas.

c. Other. Individuals who were licensed in Iowa prior to August 31, 1995, and were allowed to teach talented and gifted classes without completing the endorsement requirements must complete the endorsement requirements by July 1, 2012, in order to teach or continue to teach talented and gifted classes. A waiver provision is provided through the board of educational examiners for individuals who have been successfully teaching students who are talented and gifted.

13.28(25) *American Sign Language endorsement.*

a. Authorization. The holder of this endorsement is authorized to teach American Sign Language in kindergarten and grades one through twelve.

b. Program requirements.

(1) Degree—baccalaureate.
(2) Completion of an approved human relations program.
(3) Completion of the professional education core.

c. Content. Completion of 18 semester hours of coursework in American Sign Language to include the following:

(1) Second language acquisition.
(2) Sociology of the deaf community.
(3) Linguistic structure of American Sign Language.
(4) Language teaching methodology specific to American Sign Language.
(5) Teaching the culture of deaf people.
(6) Assessment of students in an American Sign Language program.

d. Other. Be the holder of or be eligible for one other teaching endorsement listed in rules 282—13.26(272) and 282—13.27(272) and this rule.

13.28(26) *Elementary counselor.* Rescinded IAB 7/29/09, effective 9/2/09.

13.28(27) *Secondary counselor.* Rescinded IAB 7/29/09, effective 9/2/09.

13.28(28) *School nurse endorsement.* The school nurse endorsement does not authorize general classroom teaching, although it does authorize the holder to teach health at all grade levels. Alternatively, a nurse may obtain a statement of professional recognition (SPR) from the board of educational examiners, in accordance with the provisions set out in 282—Chapter 16, Statements of Professional Recognition (SPR).

a. *Authorization.* The holder of this endorsement is authorized to provide service as a school nurse at the prekindergarten and kindergarten levels and in grades one through twelve.

b. *Program requirements.*

(1) Degree—baccalaureate, and

(2) Completion of an approved human relations program, and

(3) Completion of the professional education core. See subrules 13.18(3) and 13.18(4).

c. *Content.*

(1) Organization and administration of school nurse services including the appraisal of the health needs of children and youth.

(2) School-community relationships and resources/coordination of school and community resources to serve the health needs of children and youth.

(3) Knowledge and understanding of the health needs of exceptional children.

(4) Health education.

d. *Other.* Hold a license as a registered nurse issued by the Iowa board of nursing.

13.28(29) *Athletic coach.* K-12. An applicant for the coaching endorsement must hold a teacher's license with one of the teaching endorsements.

a. *Authorization.* The holder of this endorsement may serve as a head coach or an assistant coach in kindergarten and grades one through twelve.

b. *Program requirements.*

(1) One semester hour college or university course in the structure and function of the human body in relation to physical activity, and

(2) One semester hour college or university course in human growth and development of children and youth as related to physical activity, and

(3) Two semester hour college or university course in athletic conditioning, care and prevention of injuries and first aid as related to physical activity, and

(4) One semester hour college or university course in the theory of coaching interscholastic athletics.

[**ARC 7986B**, IAB 7/29/09, effective 9/2/09; **ARC 8248B**, IAB 11/4/09, effective 10/12/09; **ARC 8403B**, IAB 12/16/09, effective 1/20/10]

282—13.29(272) Adding, removing or reinstating a teaching endorsement.

13.29(1) *Adding an endorsement.* After the issuance of a teaching license, an individual may add other endorsements to that license upon proper application, provided current requirements for that endorsement have been met. An updated license with expiration date unchanged from the original or renewed license will be prepared.

a. *Options.* To add an endorsement, the applicant must follow one of these options:

(1) Option 1. Receive the Iowa teacher education institution's recommendation that the current approved program requirements for the endorsement have been met.

(2) Option 2. Receive verification from the Iowa teacher education institution that the minimum state requirements for the endorsement have been met in lieu of the institution's approved program.

(3) Option 3. Receive verification from a state-approved and regionally accredited institution that the Iowa minimum requirements for the endorsement have been met.

(4) Option 4. Apply for a review of the transcripts by the board of educational examiners' staff to determine if all Iowa requirements have been met. The applicant must submit documentation that all of the Iowa requirements have been met by filing transcripts and supporting documentation for review. The fee for the transcript evaluation is in 282—Chapter 12. This fee shall be in addition to the fee for adding the endorsement.

b. *Additional requirements for adding an endorsement.*

(1) In addition to meeting the requirements listed in rules 282—13.18(272) and 282—13.28(272), applicants for endorsements shall have completed a methods class appropriate for teaching the general subject area of the endorsement added.

(2) Practitioners who are adding an elementary or early childhood endorsement and have not student taught on the elementary or early childhood level shall complete a teaching practicum appropriate for teaching at the level of the new endorsement.

(3) Practitioners who are adding a secondary teaching endorsement and have not student taught on the secondary level shall complete a teaching practicum appropriate for teaching at the level of the new endorsement.

(4) Practitioners holding the K-8 endorsement in the content area of the 5-12 endorsement being added may satisfy the requirement for the secondary methods class and the teaching practicum by completing all required coursework and presenting verification of competence. This verification of competence shall be signed by a licensed evaluator who has observed and formally evaluated the performance of the applicant at the secondary level. This verification of competence may be submitted at any time during the term of the Class B license. The practitioner must obtain a Class B license while practicing with the 5-12 endorsement.

13.29(2) *Removal of an endorsement; reinstatement of removed endorsement.*

a. *Removal of an endorsement.* A practitioner may remove an endorsement from the practitioner's license as follows:

(1) To remove an endorsement, the practitioner shall meet the following conditions:

1. A practitioner who holds a standard or master educator license is eligible to request removal of an endorsement from the license if the practitioner has not taught in the subject or assignment area of the endorsement in the five years prior to the request for removal of the endorsement, and

2. The practitioner must submit a notarized written application form furnished by the board of educational examiners to remove an endorsement at the time of licensure renewal (licensure renewal is limited to one calendar year prior to the expiration date of the current license), and

3. The application must be signed by the superintendent or designee in the district in which the practitioner is under contract. The superintendent's signature shall serve as notification and acknowledgment of the practitioner's intent to remove an endorsement from the practitioner's license. The absence of the superintendent's or designee's signature does not impede the removal process.

(2) The endorsement shall be removed from the license at the time of application.

(3) If a practitioner is not employed and submits an application, the provisions of 13.29(2)*"a"*(1)"3" shall not be required.

(4) If a practitioner submits an application that does not meet the criteria listed in 13.29(2)*"a"*(1)"1" to "3," the application will be rendered void and the practitioner will forfeit the processing fee.

(5) The executive director has the authority to approve or deny the request for removal. Any denial is subject to the appeal process set forth in rule 282—11.35(272).

b. *Reinstatement of a removed endorsement.*

(1) If the practitioner wants to add the removed endorsement at a future date, all coursework for the endorsement must be completed within the five years preceding the application to add the endorsement.

(2) The practitioner must meet the current endorsement requirements when making application.

[**ARC 8248B**, IAB 11/4/09, effective 10/12/09]

282—13.30(272) Licenses—issue dates, corrections, duplicates, and fraud.

13.30(1) *Issue date on original license.* A license is valid only from and after the date of issuance.

13.30(2) *Correcting licenses.* If a licensee notifies board staff of a typographical or clerical error on the license within 30 days of the date of the board's mailing of a license, a corrected license shall be issued without charge to the licensee. If notification of a typographical or clerical error is made more than 30 days after the date of the board's mailing of a license, a corrected license shall be issued upon receipt of the fee for issuance of a duplicate license. For purposes of this rule, typographical or clerical errors include misspellings, errors in the expiration date of a license, errors in the type of license issued, and the omission or misidentification of the endorsements for which application was made. A licensee requesting the addition of an endorsement not included on the initial application must submit a new application and the appropriate application fee.

13.30(3) *Duplicate licenses.* Upon application and payment of the fee set out in 282—Chapter 12, a duplicate license shall be issued.

13.30(4) *Fraud in procurement or renewal of licenses.* Fraud in procurement or renewal of a license or falsifying records for licensure purposes will constitute grounds for filing a complaint with the board of educational examiners.

These rules are intended to implement Iowa Code chapter 272.

Filed 12/23/08, Notice 10/8/08—published 1/14/09, effective 2/18/09]
[Filed 12/24/08, Notice 10/22/08—published 1/14/09, effective 2/18/09]
[Filed ARC 7869B (Notice ARC 7600B, IAB 2/25/09), IAB 6/17/09, effective 7/22/09]
[Filed ARC 7987B (Notice ARC 7751B, IAB 5/6/09), IAB 7/29/09, effective 9/2/09]
[Filed ARC 7986B (Notice ARC 7744B, IAB 5/6/09), IAB 7/29/09, effective 9/2/09]
[Filed ARC 8133B (Notice ARC 7778B, IAB 5/20/09), IAB 9/9/09, effective 10/14/09]
[Filed ARC 8134B (Notice ARC 7860B, IAB 6/17/09), IAB 9/9/09, effective 10/14/09]
[Filed ARC 8138B (Notice ARC 7871B, IAB 6/17/09), IAB 9/9/09, effective 10/14/09]
[Filed ARC 8139B (Notice ARC 7872B, IAB 6/17/09), IAB 9/9/09, effective 10/14/09]
[Filed Emergency ARC 8248B, IAB 11/4/09, effective 10/12/09]
[Filed ARC 8400B (Notice ARC 8125B, IAB 9/9/09), IAB 12/16/09, effective 1/20/10]
[Filed ARC 8401B (Notice ARC 8121B, IAB 9/9/09), IAB 12/16/09, effective 1/20/10]
[Filed ARC 8402B (Notice ARC 8126B, IAB 9/9/09), IAB 12/16/09, effective 1/20/10]
[Filed ARC 8403B (Notice ARC 8129B, IAB 9/9/09), IAB 12/16/09, effective 1/20/10]

CHAPTER 77
STANDARDS FOR TEACHER INTERN PREPARATION PROGRAMS

281—77.1(256) General statement. Programs of teacher intern preparation leading to licensure in Iowa are subject to approval by the state board of education, as provided in Iowa Code chapter 256.

281—77.2(256) Definitions. For purposes of clarity, the following definitions are used throughout the chapter:

"AEA" means area education agency.

"BOEE" means the board of educational examiners, the board responsible for establishing licensure requirements and issuing licenses.

"Cooperating teachers" means classroom teachers who provide guidance and supervision to teacher candidates during the candidates' field experiences in the schools.

"Department" means the department of education.

"Director" means the director of education.

"Institution" means a four-year college or university in Iowa offering teacher intern preparation and seeking state board approval of its teacher intern preparation program.

"INTASC" means the Interstate New Teacher Assessment and Support Consortium, the source of national standards for beginning teachers.

"Intern" means an individual who is enrolled in a teacher intern preparation program leading to teacher intern licensure.

"Mentor" means an individual, employed by a school district or area education agency as a classroom teacher, or a retired teacher, who holds a valid license issued under Iowa Code chapter 272. The individual must have a record of four years of successful teaching practice with at least two of the four years on a nonprobationary basis and must demonstrate professional commitment to both the improvement of teaching and learning and the development of beginning teachers or teacher interns.

"Practitioner" means a teacher, administrator, or other school personnel holding a license issued by the board of educational examiners.

"Program" means the program for teacher intern preparation at colleges and universities leading to licensure of teacher interns.

"State board" means the state board of education.

"Teacher intern candidate" means an individual who is enrolled in a teacher intern preparation program leading to teacher intern licensure.

"Teacher intern preparation program" means the program for teacher intern preparation at colleges and universities leading to licensure of teacher interns.

"Unit" means the organizational entity within an institution with the responsibility of administering the teacher intern preparation program.

281—77.3(256) Institutions affected. All Iowa colleges and universities engaged in the preparation of teacher interns and seeking state board approval of their programs shall meet the standards contained in this chapter.

281—77.4(256) Criteria for Iowa teacher intern preparation programs. Each institution seeking approval of its program of teacher intern preparation shall file evidence of the extent to which it meets the standards contained in this chapter by means of a written self-evaluation report and an evaluation conducted by the department. For institutions not already offering practitioner preparation programs approved by the state board, the evaluation process shall include a site visit by representatives of the department and additional documentation as needed. After the state board has approved the teacher intern preparation program filed by an institution, teacher intern candidates who complete the program and are recommended by the authorized official of that institution will be issued the appropriate license and endorsement(s).

281—77.5(256) Approval of programs. For initial approval, institutions shall submit written documentation of the teacher intern preparation program's compliance with program approval rules 77.10(256) through 77.16(256). For institutions that do not already have practitioner preparation programs approved by the state board, the evaluation process shall include a site visit by representatives of the department and additional documentation as needed. Approval by the state board of the institutions' teacher intern preparation programs shall be based on the recommendation of the director after study of the factual and evaluative evidence on record about each program in terms of the standards contained in this chapter. Approval, if granted, shall cover the period of time between initial approval and the institution's next regularly scheduled state review under rules 281 IAC 79.5(256) and 281 IAC 79.6(256). After the initial approval period, approval of the teacher intern preparation program will be included as part of the institution's reapplication for approval of its entire practitioner preparation program. Approval, if granted to institutions offering only teacher intern preparation programs, shall be for a term of five years; however, approval for a lesser tern may be granted by the state board if it determines conditions so warrant.

If approval is not granted, the applying institution will be advised concerning the areas in which improvement or changes appear to be essential for approval. In this case, the institution shall be given the opportunity to present factual information concerning its programs at the next regularly scheduled meeting of the state board. The institution may also reapply at its discretion when it is ready to show what actions have been taken to address the areas suggested for improvement.

281—77.6(256) Periodic reports. Institutions with approved teacher intern preparation programs shall make periodic reports upon request of the department. The reports shall provide basic information necessary to keep up-to-date records of each teacher intern preparation program and to carry out research studies relating to teacher intern preparation.

281—77.7(256) Approval of program changes. Upon application for approval of program changes by an institution, the director is authorized to approve minor additions to, or changes within, the curricula of an institution's approved teacher intern preparation program. When an institution proposes a revision that exceeds the primary scope of its programs, the revision shall become operative only after having been approved by the state board.

281—77.8(256) Governance and resources. As a component of the program, the institution shall work collaboratively with the local school district(s) or AEA.

77.8(1) The institution's responsibilities shall include but not be limited to:

a. Organizing and implementing the screening of prospective teacher interns;

b. Submitting a recommendation by the authorized official of the institution to the BOEE for a teacher intern license. The recommendation from the institution must be submitted to the BOEE upon the teacher intern candidate's completion of the coursework and competencies, as outlined in the program content in subrule 77.12(1), and prior to the beginning of the teacher internship year;

c. Supervising the teacher intern during the internship year;

d. Verifying that the teacher intern has successfully completed all required coursework and demonstrated all required competencies in the approved teacher intern program;

e. Submitting a recommendation to the BOEE that the teacher intern candidate is eligible to move from the teacher intern license to the initial license;

f. Preparing data in response to the department's request for information regarding, but not limited to, the selection of teacher interns and the institution's teacher intern preparation program, institutional support, local school district or AEA mentors, and local school district or AEA support.

77.8(2) The local school district's or AEA's responsibilities shall include, but not be limited to:

a. Offering employment to an individual who has been evaluated by a college or university and is eligible for or accepted in the approved teacher intern preparation program;

b. Participating in a mentoring and induction program;

c. Providing a district mentor for the teacher intern;

d. Ensuring that an assignment does not unnecessarily overload the teacher intern with extracurricular duties not related to the teaching assignment;

e. Providing other support and supervision, as needed, to the teacher intern to maximize the opportunity for the teacher intern to succeed;

f. Preparing data in response to the department's request for information regarding, but not limited to, the selection of teacher interns and the district's or AEA's teacher intern preparation program, institutional support, the local school district or AEA mentors, and local school district or AEA support.

Mentors serve the role of coaching, guiding, and providing feedback to the intern. This relationship is not a supervisory situation and evaluation is not part of this model.

77.8(3) A teacher intern committee, with membership including, but not limited to, a program director from the institution, teacher education faculty, and 7-12 school district personnel, shall design the teacher intern preparation program.

The teacher intern committee shall develop program goals, the program of study including field experiences, a system of support for teacher interns including mentoring and supervision by program faculty, an assessment plan for documenting teacher intern candidates' progress during preparation, and other items deemed appropriate to the program design.

Upon implementation of the teacher intern preparation program, a teacher intern committee shall monitor progress of the program toward goals, examine formative and summative data about candidates and the program, and recommend ways to address issues arising during implementation or subsequent to analysis of evaluative data.

77.8(4) Resources shall support quality clinical practice for all teacher intern candidates, professional development for faculty, and technological and instructional needs of faculty to prepare teacher intern candidates with the dispositions, knowledge, and skills necessary to support student learning.

77.8(5) Teacher intern candidates' and faculty's access to books, journals, and electronic information shall support teaching and scholarship.

77.8(6) Sufficient numbers of faculty and administrative, clerical, and technical staff shall be available to ensure the consistent planning, delivery, and quality of the teacher intern program.

77.8(7) The use of part-time faculty and graduate students in teaching roles shall be managed to ensure integrity, quality, and continuity of the teacher intern preparation program.

77.8(8) Institutional commitment shall include financial resources, facilities and equipment to ensure the fulfillment of the institution's and unit's missions, delivery of a quality program, and preparation of teacher intern candidates.

281—77.9(256) Diversity.

77.9(1) Recruitment, admissions, hiring, and retention policies and practices shall support a diverse faculty and teacher intern candidate population in the program.

77.9(2) Efforts toward racial, ethnic, and gender diversity among teacher intern candidates and program faculty shall be documented. In addition, diversity efforts shall include persons with disabilities, persons from different language and socioeconomic backgrounds, and persons from different regions of the country and world.

77.9(3) Unit efforts in increasing or maintaining diversity shall be reflected in plans, monitoring of plans and efforts, and results.

77.9(4) The institution, the program and members of the partnership shall maintain a climate that supports diversity in general as well as supporting teacher intern candidates and faculty from underrepresented groups in the program.

281—77.10(256) Faculty.

77.10(1) Faculty members from the institution and others in the partnership shall have preparation and have had experiences in situations similar to those for which the teacher interns are being prepared.

77.10(2) The collective competence and background of the entire teacher intern preparation program faculty shall reflect a balance of theory, experience, and knowledge appropriate to the teacher intern preparation program being offered.

77.10(3) The program shall administer a systematic and comprehensive evaluation system and professional development activities to enhance the teaching competence and intellectual vitality of the teacher intern preparation program faculty.

77.10(4) Policies and assignments shall allow faculty to be involved effectively in teaching, scholarship, and supervision of teacher intern candidates.

77.10(5) Teacher intern faculty members shall maintain an ongoing, meaningful involvement in activities in schools where teacher interns are employed. Activities of full-time permanent teacher intern faculty members from the institution preparing teacher interns shall include at least 40 hours of team teaching during a period not to exceed five years in duration at the middle or secondary school level. This five-year period shall align with the institution's scheduled cycle of state review.

281—77.11(256) Teacher intern selection.

77.11(1) Representatives from the teacher intern committee shall be actively involved in the identification of criteria for selecting teacher intern candidates. Representatives from the teacher intern committee shall be actively involved in the screening, interviewing and selection of teacher intern candidates.

77.11(2) Rigorous screening shall be used to select teacher intern candidates. The screening shall include, but not be limited to:

a. Verification of the prospective candidate's completion of a baccalaureate degree from a regionally accredited institution. If any candidate's undergraduate grade point average is less than 2.5 on a 4.0 scale, the program admission criteria shall specify the additional criteria that an applicant must satisfy for provisional admittance to the teacher intern preparation program;

b. Evaluation of the prospective candidate's transcripts to determine if the prospective candidate meets the state minimum requirements for at least one of the board of educational examiners' secondary (7-12) endorsement areas listed in 282 IAC 14.141(272);

c. Evaluation of the prospective candidate's minimum of three years of postbaccalaureate work experience;

d. An in-person interview of the prospective candidate designed to generate information related to the attributes identified as essential for candidates by the partnership;

e. Examination of references submitted by the prospective teacher intern;

f. Evaluation of an impromptu writing sample submitted by the prospective teacher intern; and

g. Verification that the prospective candidate has successfully passed a basic skills test at the level approved by the teacher education institution.

281—77.12(256) Curriculum and instruction.

77.12(1) *Content.* Teacher intern candidates shall develop the dispositions, knowledge, and performance expectations of the INTASC standards embedded in the professional education core for an Iowa teaching license at a level appropriate for a novice teacher. The teacher intern preparation program content shall include:

a. Coursework and competencies equivalent to a minimum of 12 semester hours specified by the board of educational examiners to be completed prior to the beginning of the candidate's initial employment as a teacher intern. The coursework and competencies shall include, but not be limited to:

(1) Learning environment/classroom management. The intern shall demonstrate an understanding of individual and group motivation and behavior to create a learning environment that encourages positive social interaction, active engagement in learning, and self-motivation.

(2) Instructional planning. The intern shall plan instruction based upon knowledge of subject matter, students, the community, curriculum goals, and state curriculum models.

(3) Instructional strategies. The intern shall demonstrate an understanding of and shall use a variety of instructional strategies to encourage students' development of critical thinking, problem solving, and performance skills.

(4) Student learning. The intern shall demonstrate an understanding of how students learn and develop and provide learning opportunities that support intellectual, career, social, and personal development.

(5) Diverse learners. The intern shall demonstrate an understanding of how students differ in their approaches to learning and create instructional opportunities that are equitable and are adaptable to diverse learners.

(6) Collaboration, ethics and relationships. The intern shall foster relationships with parents, school colleagues, and organizations in the larger community to support students' learning and development.

(7) Assessment. The intern shall demonstrate an understanding of and shall use formal and informal assessment strategies to evaluate the continuous intellectual, social, and physical development of the learner.

(8) Field experiences that provide opportunities for interaction with students in an environment that supports learning in context. These experiences shall total at least 50 contact hours in the field prior to the beginning of the academic year of the candidate's initial employment as a teacher intern.

b. A minimum of 4 semester hours of a teacher intern seminar during the teacher internship year to include support and extension of coursework from the teacher intern introductory content.

c. Coursework and competencies equivalent to a minimum of 12 semester hours specified by the BOEE to be completed prior to the recommendation for an initial teaching license. The coursework and competencies shall include but not be limited to:

(1) Foundations, reflection, and professional development. The intern shall continually evaluate the effects of practitioners' choices and actions on students, parents, and other professionals in the learning community and actively seek out opportunities to grow professionally.

(2) Communication. The intern shall use knowledge of effective verbal, nonverbal, and media communication techniques, and other forms of symbolic representation, to foster active inquiry and collaboration and to support interaction in the classroom.

(3) Exceptional learner. The intern shall use knowledge of exceptional learners that contributes to the education of individuals with disabilities and the gifted and talented.

(4) Reading strategies. The intern shall integrate reading strategies into the teaching of the content area.

(5) Computer technology. The intern shall use knowledge of technology, including computers, to enhance instruction.

(6) An advanced study of the items set forth in 77.12(1)*"a"*(1) to (7).

77.12(2) *Instructional practices.* The program faculty shall:

a. Apply adult learning theory and its impact on professional development;

b. Utilize innovative instructional practice supported by research;

c. Reintegrate active engagement of teacher intern candidates and facilitate teacher intern reflection; and

d. Connect professional education studies prior to, during, and following the internship year with teacher intern candidates' field experiences.

281—77.13(256) Candidate support.

77.13(1) The program shall provide an orientation for teacher intern candidates prior to the internship year including but not limited to the program goals and expectations, licensure requirements, support to be provided by the supervisor from the institution and the teacher mentor at the site of the internship, and cohort-building.

77.13(2) Teacher intern faculty shall provide teacher intern candidates with academic advising, monitoring of their performance throughout the program, and consultation opportunities.

77.13(3) Teacher intern faculty shall provide regular supervision in teacher intern candidates' classrooms with additional supervision and assistance as needed.

77.13(4) The program shall coordinate support between the teacher intern candidate's local district mentor and program supervisor. In some cases, the institution may wish to hire its own on-site cooperating teacher to serve as a second mentor who could also provide evaluative feedback to the institution.

77.13(5) The program shall offer the teacher intern candidate access to support services offered by the institution.

281—77.14(256) Candidate assessment.

77.14(1) Performance of teacher intern candidates shall be measured against national professional standards, state licensure standards, and the program's learning outcomes.

77.14(2) The program shall utilize a coherent, sequential assessment system for individual teacher intern candidates. The assessment system shall clearly document candidates' attainment of the unit's and the board of educational examiners' licensure standards by providing evidence via multiple measures of content knowledge, professional and pedagogical knowledge, and effect on student learning and achievement. Whenever possible, this assessment system shall document teacher intern candidates' performance of content specified in 77.12(1)*"a"*(1) to (7) and 77.12(1)*"c"*(1) to (5) in the teacher intern candidates' classrooms and shall document candidates' performance toward meeting the Iowa teaching standards.

77.14(3) The institution shall document teacher intern candidates' completion of licensure requirements, and the authorized official of the institution shall recommend eligible candidates for licensure.

281—77.15(256) Program evaluation. The institution shall:

77.15(1) Demonstrate how the information gathered via the individual teacher intern candidate assessment system is utilized to refine and revise the program's goals, content, delivery strategies, and candidate support.

77.15(2) Document the quality of programs through the collective presentation of assessment data related to performance of teacher intern candidates and demonstrate how the data are used for continuous program improvement.

a. This documentation shall include evidence of evaluative data collected by the teacher intern preparation program through studies of teacher intern candidates while they are in the program and data collected from the district(s) or AEA employing the candidates. This evidence shall include, but is not limited to, candidates' content and pedagogical knowledge and performance, level of support for candidates provided by the institution and the local district or AEA, and perceived quality of preparation throughout the program.

b. This documentation shall include evidence of evaluative data collected by the teacher intern preparation program through follow-up studies of teacher intern preparation program graduates and their employers.

77.15(3) Submit an annual report to the department including, but not limited to, a composite of evaluative data collected by the program.

These rules are intended to implement Iowa Code sections 256.7 and 256.16.

[Filed 5/9/02, Notice 4/3/02—published 5/29/02, effective 7/3/02]
[Filed 11/21/02, Notice 10/2/02—published 12/11/02, effective 1/15/03]
[Filed 11/16/05, Notice 8/31/05—published 12/7/05, effective 1/11/06]

EDUCATIONAL EXAMINERS BOARD[282]

Notice of Intended Action

Twenty-five interested persons, a governmental subdivision, an agency or association of 25 or more persons may demand an oral presentation hereon as provided in Iowa Code section 17A.4(1)*"b."*

Notice is also given to the public that the Administrative Rules Review Committee may, on its own motion or on written request by any individual or group, review this proposed action under section 17A.8(6) at a regular or special meeting where the public or interested persons may be heard.

Pursuant to the authority of Iowa Code section 272.2, the Board of Educational Examiners hereby gives Notice of Intended Action to amend Chapter 13, "Issuance of Teacher Licenses and Endorsements," Iowa Administrative Code.

The proposed amendment to the rules for the portfolio review and evaluation process ensures that applicants who are completing nontraditional teacher preparation programs meet the same basic requirements as other applicants for Iowa licensure.

A waiver provision is not included. The Board has adopted a uniform waiver rule.

Any interested party or persons may present their views either orally or in writing at the public hearing that will be held Wednesday, November 25, 2009, at 1 p.m. in Room 3 Southwest, Third Floor, Grimes State Office Building, East 14th Street and Grand Avenue, Des Moines, Iowa.

At the hearing, persons will be asked to give their names and addresses for the record and to confine their remarks to the subject of the proposed amendment. Persons who wish to make oral presentations at the public hearing may contact the Executive Director, Board of Educational Examiners, Grimes State Office Building, East 14th Street and Grand Avenue, Des Moines, Iowa 50319-0147, or at (515)281-5849, prior to the date of the public hearing.

Any person who intends to attend the public hearing and requires special accommodations for specific needs, such as a sign language interpreter, should contact the office of the Executive Director at (515)281-5849.

Any interested person may make written comments or suggestions on the proposed amendment before 4 p.m. on Monday, November 30, 2009. Written comments and suggestions should be addressed to Kim Cunningham, Board Secretary, Board of Educational Examiners, at the above address, or sent by E-mail to kim.cunningham@iowa.gov, or by fax to (515)281-7669.

This amendment is intended to implement Iowa Code chapter 272.

The following amendment is proposed.

Amend rule 282—13.3(272) as follows:

13.3(3)*h.* If through a transcript analysis the professional education core requirements set forth in 13.9(4)*"a"*(1) to (7), 13.9(4)*"c"*(1) to (5), and 13.18(2) and the content endorsement requirements may be identified by course titles, published course descriptions, and grades, then the transcripts will be reviewed to determine the applicant's eligibility for an Iowa teaching license. However, if the professional education core requirements of 13.9(4)*"a"*(1) to (7), 13.9(4)*"c"*(1) to (5), and 13.18(2) and the content endorsement requirements cannot be reviewed in this manner, a portfolio review and evaluation process will be utilized.

13.3(4) *Portfolio review and evaluation process.* An applicant whose professional education core requirements pursuant to 13.9(4)*"a"*(1) to (7), 13.9(4)*"c"*(1) to (5), and 13.18(2) or whose content endorsement requirements for special education could not be reviewed through transcript analysis may submit to the board a portfolio in the approved format for review and evaluation.

a. An applicant must demonstrate proficiency in seven of the nine standards in the Iowa professional education core, set forth in 13.18(4)*"a"* to *"i,"* to be eligible to receive a license.

b. An applicant must have completed at least 50 percent of the endorsement requirements through a two- or four-year institution in order for the endorsement to be included on the license. An applicant who does not have at least 50 percent of one content endorsement area completed will not be issued a license.

c. An applicant must meet with the board of educational examiners to answer any of the board's questions concerning the portfolio.

d. Any deficiencies in the professional education core as set forth in 13.18(4)*"a"* to *"i"* or in the special education content endorsement area that are identified during the portfolio review and evaluation process shall be met through coursework with course credits completed at a state-approved, regionally accredited institution or through courses approved by the executive director. Other content deficiencies may be met through coursework in a two- or four-year institution in which course credits are given.

~~**13.3(2)**~~ **13.3(5)** *Definitions.* ~~A recognized non-Iowa teacher preparation institution is one~~

"Recognized non-Iowa teacher preparation institution" means an institution that is state-approved and is accredited by the regional accrediting agency for the territory in which the institution is located.

"Nontraditional" means any method of teacher preparation that falls outside the traditional method of preparing teachers, that provides at least a one- or two-year sequenced program of instruction taught at regionally accredited and state-approved colleges or universities, that includes commonly recognized pedagogy classes being taught for course credit, and that requires a student teaching component.

"Proficiency," for the purposes of 13.3(4)*"a,"* means that an applicant has passed all parts of the standard.

Shortage Areas, 2008-2010

2008-2009 & 2009-2010

Iowa Teacher Shortage Areas

Special Education:

Instructional Strategist I (Formerly K-6 & 7-12 Multi-categorical Resource and K-6 & 7-12 Special Class with Integration)

Instructional Strategist II LD-BD (Formerly K-6 & 7-12 Learning Disabilities and K-6 & 7-12 Behavior Disorders)

Instructional Strategist II MD (Formerly K-6 & 7-12 Mental Disabilities and K-12 Moderate/Severe/Profoundly Handicapped)

Pk-K Early Childhood Special Education

Instructional Strategist II PD (Formerly K-6 Physically Handicapped)

Birth to 21 Itinerant Hearing Impaired

Birth to 21 Itinerant Visually Impaired

5-12 Family & Consumer Science

K-8 & 5-12 School Media Specialist

K-12 Talented & Gifted

K-8 & 5-12 Counselor

General Education:

5-12 Science (all)

5-12 Mathematics

K-12 English as a Second Language

5-12 Foreign Language (all)

K-8 & 5-12 Music

5-12 Industrial Technology

5-12 Agriculture

281—83.4 (284) Iowa teaching standards and criteria. The Iowa teaching standards and supporting criteria represent a set of knowledge and skills that reflects the best evidence available regarding effective teaching. The purpose of the standards and supporting criteria is to provide Iowa school districts and area education agencies with a consistent representation of the complexity and the possibilities of quality teaching. The standards shall serve as the basis for comprehensive evaluations of teachers and as a basis for professional development plans. Each standard with supporting criteria is outlined as follows:

83.4(1) Demonstrates ability to enhance academic performance and support for and implementation of the school district's student achievement goals.

a. The teacher:

(1) Provides evidence of student learning to students, families, and staff.

(2) Implements strategies supporting student, building, and district goals.

(3) Uses student performance data as a guide for decision making.

(4) Accepts and demonstrates responsibility for creating a classroom culture that supports the learning of every student.

(5) Creates an environment of mutual respect, rapport, and fairness.

(6) Participates in and contributes to a school culture that focuses on improved student learning.

(7) Communicates with students, families, colleagues, and communities effectively and accurately.

b. Alternative criteria for area education agency staff who meet the definition of "teacher" herein. The staff member:

(1) Uses knowledge and understanding of the area education agency's mission, goals, and strategic priorities to provide services that enhance academic performance.

(2) Understands and uses knowledge of area education agency and district goals and data to provide services that enhance academic performance.

(3) Participates in and contributes to a positive learning culture.

(4) Communicates with students, families, colleagues, and communities effectively and accurately.

(5) Uses area education agency, district, and student data as a guide for decision making.

83.4(2) Demonstrates competence in content knowledge appropriate to the teaching position.

a. The teacher:

(1) Understands and uses key concepts, underlying themes, relationships, and different perspectives related to the content area.

(2) Uses knowledge of student development to make learning experiences in the content area meaningful and accessible for every student.

(3) Relates ideas and information within and across content areas.

(4) Understands and uses instructional strategies that are appropriate to the content area.

b. Alternative criteria for area education agency staff who meet the definition of "teacher" herein. The staff member:

(1) Understands, communicates, and uses key concepts and best practice in fulfillment of area education agency roles and responsibilities.

(2) Uses knowledge of child and adolescent development and of adult learning to make interventions and strategies meaningful, relevant, and accessible.

(3) Relates professional knowledge and services within and across multiple content and discipline areas.

(4) Understands and supports strategies and interventions that are best practice across content and discipline areas.

83.4(3) Demonstrates competence in planning and preparing for instruction.

a. The teacher:

(1) Uses student achievement data, local standards, and the district curriculum in planning for instruction.

(2) Sets and communicates high expectations for social, behavioral, and academic success of all students.

(3) Uses students' developmental needs, backgrounds, and interests in planning for instruction.

(4) Selects strategies to engage all students in learning.

(5) Uses available resources, including technologies, in the development and sequencing of instruction.

b. Alternative criteria for area education agency staff who meet the definition of "teacher" herein. The staff member:

(1) Demonstrates the ability to organize and prioritize time, resources, and responsibilities.

(2) Demonstrates the ability to individually and collaboratively plan and prepare professional services that address the range of district, teacher, parent, and student needs.

(3) Uses district and student data to develop goals and interventions.

(4) Demonstrates the flexibility to plan for professional services based on changing conditions of the work context and environment.

(5) Uses available resources, including technology, to plan and develop professional services.

83.4(4) Uses strategies to deliver instruction that meets the multiple learning needs of students.

a. The teacher:

(1) Aligns classroom instruction with local standards and district curriculum.

(2) Uses research-based instructional strategies that address the full range of cognitive levels.

(3) Demonstrates flexibility and responsiveness in adjusting instruction to meet student needs.

(4) Engages students in varied experiences that meet diverse needs and promote social, emotional, and academic growth.

(5) Connects students' prior knowledge, life experiences, and interests in the instructional process.

(6) Uses available resources, including technologies, in the delivery of instruction.

b. Alternative criteria for area education agency staff who meet the definition of "teacher" herein. The staff member:

(1) Aligns service delivery to district, teacher, parent, and student needs.

(2) Provides consultation, instruction, interventions, and strategies that align with learner needs.

(3) Demonstrates flexibility and responsiveness in adjusting services to meet diverse learner needs.

(4) Uses and supports research-based and evidence-based practices to meet learner needs.

(5) Uses available resources, including technology, to provide professional services that meet learner needs.

83.4(5) Uses a variety of methods to monitor student learning.

a. The teacher:

(1) Aligns classroom assessment with instruction.

(2) Communicates assessment criteria and standards to all students and parents.

(3) Understands and uses the results of multiple assessments to guide planning and instruction.

(4) Guides students in goal setting and assessing their own learning.

(5) Provides substantive, timely, and constructive feedback to students and parents.

(6) Works with other staff and building and district leadership in analysis of student progress.

b. Alternative criteria for area education agency staff who meet the definition of "teacher" herein. The staff member:

(1) Uses appropriate assessment, data collection, and data analysis methods that support alignment of services with learner needs.

(2) Works collaboratively within the learning community to establish measurable goals and to identify formative and summative methods to monitor progress and the quality of implementation.

(3) Communicates the rationale and criteria of assessment and monitoring methods.

(4) Elicits and provides timely and quality feedback on assessment and monitoring.

83.4(6) Demonstrates competence in classroom management.

a. The teacher:

(1) Creates a learning community that encourages positive social interaction, active engagement, and self-regulation for every student.

(2) Establishes, communicates, models, and maintains standards of responsible student behavior.

(3) Develops and implements classroom procedures and routines that support high expectations for student learning.

(4) Uses instructional time effectively to maximize student achievement.

(5) Creates a safe and purposeful learning environment.

b. Alternative criteria for area education agency staff who meet the definition of "teacher" herein. The staff member:

(1) Models respectful dialogue and behaviors within and across job responsibilities.

(2) Promotes and maintains a positive, safe, and productive environment.

(3) Works collaboratively and is flexible.

(4) Communicates accurately and effectively.

83.4(7) Engages in professional growth.

a. The teacher:

(1) Demonstrates habits and skills of continuous inquiry and learning.

(2) Works collaboratively to improve professional practice and student learning.

(3) Applies research, knowledge, and skills from professional development opportunities to improve practice.

(4) Establishes and implements professional development plans based upon the teacher's needs aligned to the Iowa teaching standards and district/building student achievement goals.

b. Alternative criteria for area education agency staff who meet the definition of "teacher" herein. The staff member:

(1) Demonstrates habits and skills of continuous inquiry and learning.

(2) Works collaboratively to improve professional practices.

(3) Applies and shares research, knowledge, and skills from professional development.

(4) Establishes and implements professional development plans aligned to area education agency, district, and student learning goals.

83.4(8) Fulfills professional responsibilities established by the school district.

a. The teacher:

(1) Adheres to board policies, district procedures, and contractual obligations.

(2) Demonstrates professional and ethical conduct as defined by state law and district policy.

(3) Contributes to efforts to achieve district and building goals.

(4) Demonstrates an understanding of and respect for all learners and staff.

(5) Collaborates with students, families, colleagues, and communities to enhance student learning.

b. Alternative criteria for area education agency staff who meet the definition of "teacher" herein. The staff member:

(1) Adheres to board policies, area education agency procedures, federal and state rules, and contractual obligations.

(2) Demonstrates professional and ethical conduct as defined by state law and area education agency policies.

(3) Contributes to efforts to achieve area education agency goals.

(4) Demonstrates an understanding of and respect for all learners.

(5) Collaborates with all learners.

83.4(9) The school board shall provide comprehensive evaluations for beginning teachers using the Iowa teaching standards and criteria listed in rule 281—83.4(284). The school board, for the purposes of performance reviews for teachers other than beginning teachers, shall provide evaluations that contain, at a minimum, the Iowa teaching standards and criteria listed in rule 281—83.4(284). A local school board and its certified bargaining representative may negotiate, pursuant to Iowa Code chapter 20, additional teaching standards and criteria for use in a performance review. In any school district or area education agency where there is no certified bargaining unit, additional standards and criteria may be determined by the board.

281—83.10(284A) Iowa school leadership standards and criteria for administrators. The Iowa school leadership standards and criteria represent a set of knowledge and skills that reflects the best evidence available regarding effective leadership. The standards and criteria provide school districts with a consistent basis for evaluations of administrators and serve as the basis for professional development plans for administrators. A local school board may establish additional administrator standards and related criteria, but shall at a minimum utilize the following standards, with supporting criteria listed after each, in evaluating its school leaders and adopting individual professional development plans therefor:

83.10(1) *Shared vision.* An educational leader promotes the success of all students by facilitating the development, articulation, implementation, and stewardship of a vision of learning that is shared and supported by the school community. The administrator:

a. In collaboration with others, uses appropriate data to establish rigorous, concrete goals in the context of student achievement and instructional programs.

b. Uses research and best practice in improving the educational program.

c. Articulates and promotes high expectations for teaching and learning.

d. Aligns and implements the educational program, plans, actions, and resources with the district's vision and goals.

e. Provides leadership for major initiatives and efforts to effectuate change.

f. Communicates effectively with various stakeholders regarding progress with school improvement plan goals.

83.10(2) *Culture of learning.* An educational leader promotes the success of all students by advocating, nurturing, and sustaining a school culture and instructional program conducive to student learning and staff professional development. The administrator:

a. Provides leadership for assessing, developing, and improving the climate and culture of learning.

b. Systematically and fairly recognizes and celebrates accomplishments of staff and students.

c. Provides leadership, encouragement, opportunities, and structure for staff to continually design more effective teaching and learning experiences for all students.

d. Monitors and evaluates the effectiveness of curriculum, instruction, and assessment.

e. Evaluates staff and provides ongoing coaching for improvement.

f. Ensures that staff members have professional development that directly enhances their performance and improves student learning.

g. Uses current research and theory about effective schools and leadership to develop and revise the administrator's professional growth plan.

h. Promotes collaboration with all stakeholders.

i. Is easily accessible and approachable to all stakeholders.

j. Is highly visible and engaged in the school community.

k. Articulates the desired school culture and shows evidence about how it is reinforced.

83.10(3) *Management.* An educational leader promotes the success of all students by ensuring management of the organization, operations, and resources for a safe, efficient, and effective learning environment. The administrator:

a. Complies with state and federal mandates and local school board policies.

b. Recruits, selects, inducts, and retains staff to support quality instruction.

c. Addresses current and potential issues in a timely manner.

d. Manages fiscal and physical resources responsibly, efficiently, and effectively.

e. Protects instructional time by designing and managing operational procedures to maximize learning.

f. Communicates effectively with both internal and external audiences about the operations of the school.

83.10(4) *Family and community.* An educational leader promotes the success of all students by collaborating with families and community members, responding to diverse community interests and needs, and mobilizing community resources. The administrator:

a. Engages family and community by promoting shared responsibility for student learning and support of the educational system.

b. Promotes and supports a structure for family and community involvement in the educational system.

c. Facilitates the connections of students and families to the health and social services that support a focus on learning.

d. Collaboratively establishes a culture that welcomes and honors families and community and seeks ways to engage them in student learning.

83.10(5) *Ethics.* An educational leader promotes the success of all students by acting with integrity and fairness and in an ethical manner. The administrator:

a. Demonstrates ethical and professional behavior.

b. Demonstrates values, beliefs, and attitudes that inspire others to higher levels of performance.

c. Fosters and maintains caring professional relationships with staff.

d. Demonstrates appreciation for and sensitivity to diversity in the school community.

e. Is respectful of divergent opinions.

83.10(6) *Societal context.* An educational leader promotes the success of all students by understanding the profile of the community and by responding to and influencing the larger political, social, economic, legal, and cultural context. The administrator:

a. Collaborates with service providers and other decision makers to improve teaching and learning.

b. Advocates for the welfare of all members of the learning community.

c. Designs and implements appropriate strategies to reach desired goals.

279.19 Probationary period.

The first three consecutive years of employment of a teacher in the same school district are a probationary period. However, if the teacher has successfully completed a probationary period of employment for another school district located in Iowa, the probationary period in the current district of employment shall not exceed one year. A board of directors may waive the probationary period for any teacher who previously has served a probationary period in another school district and the board may extend the probationary period for an additional year with the consent of the teacher.

In the case of the termination of a probationary teacher's contract, the provisions of sections 279.15 and 279.16 shall apply. However, if the probationary teacher is a beginning teacher who fails to demonstrate competence in the Iowa teaching standards in accordance with chapter 284, the provisions of sections 279.17 and 279.18 shall also apply.

The board's decision shall be final and binding unless the termination was based upon an alleged violation of a constitutionally guaranteed right of the teacher or an alleged violation of public employee rights of the teacher under section 20.10.

Notwithstanding any provision to the contrary, the grievance procedures of section 20.18 relating to job performance or job retention shall not apply to a teacher during the first two years of the teacher's probationary period. However, this paragraph shall not apply to a teacher who has successfully completed a probationary period in a school district in Iowa.

[C77, 79, 81, §279.19]

98 Acts, ch 1215, §43; 98 Acts, ch 1216, §26, 41; 2001 Acts, ch 161, §18; 2002 Acts, ch 1152, §5

279.24 Contract with administrators - automatic continuation or termination.

1. An administrator's contract shall remain in force and effect for the period stated in the contract. The contract shall be automatically continued in force and effect for additional one-year periods beyond the end of its original term, except and until the contract is modified or terminated by mutual agreement of the board of directors and the administrator, or until terminated as provided by this section.

2. If the board of directors is considering termination of an administrator's contract, prior to any formal action, the board may arrange to meet in closed session, in accordance with the provisions of section 21.5, with the administrator and the administrator's representative. The board shall review the administrator's evaluation, review the reasons for nonrenewal, and give the administrator an opportunity to respond. If, following the closed session, the board of directors and the administrator are unable to mutually agree to a modification or termination of the administrator's contract, or the board of directors and the administrator are unable to mutually agree to enter into a one-year nonrenewable contract, the board of directors shall follow the procedures in this section.

3. An administrator may file a written resignation with the secretary of the school board on or before May 1 of each year or the date specified by the school board for return of the contract, whichever date occurs first.

4. Administrators employed in a school district for less than two consecutive years are probationary administrators. However, a school board may waive the probationary period for any administrator who has previously served a probationary period in another school district and the school board may extend the probationary period for an additional year with the consent of the administrator. If a school board determines that it should terminate a probationary administrator's contract, the school board shall notify the administrator not later than May 15 that the contract will not be renewed beyond the current year. The notice shall be in writing by letter, personally delivered, or mailed by certified mail. The notification shall be complete when received by the administrator. Within ten days after receiving the notice, the administrator may request a private conference with the school board to discuss the reasons for termination. The school board's decision to terminate a probationary administrator's contract shall be final unless the termination was based upon an alleged violation of a constitutionally guaranteed right of the administrator.

5. The school board may, by majority vote of the membership of the school board, cause the contract of an administrator to be terminated. If the school board determines that it should consider the termination of a nonprobationary administrator's contract, the following procedure shall apply:

a. On or before May 15, the administrator shall be notified in writing by a letter personally delivered or mailed by certified mail that the school board has voted to consider termination of the contract. The notification shall be complete when received by the administrator.

b. The notice shall state the specific reasons to be used by the school board for considering termination which for all administrators except superintendents shall be for just cause.

c. Within five days after receipt of the written notice that the school board has voted to consider termination of the contract, the administrator may request in writing to the secretary of the school board that the notification be forwarded to the board of educational examiners along with a request that the board of educational examiners submit a list of five qualified administrative law judges to the parties. Within three days from receipt of the list the parties shall select an administrative law judge by alternately removing a name from the list until only

one name remains. The person whose name remains shall be the administrative law judge. The parties shall determine by lot which party shall remove the first name from the list. The hearing shall be held no sooner than ten days and not later than thirty days following the administrator's request unless the parties otherwise agree. If the administrator does not request a hearing, the school board, not later than May 31, may determine the continuance or discontinuance of the contract and, if the board determines to continue the administrator's contract, whether to suspend the administrator with or without pay for a period specified by the board. School board action shall be by majority roll call vote entered on the minutes of the meeting. Notice of school board action shall be personally delivered or mailed to the administrator.

d. The administrative law judge selected shall notify the secretary of the school board and the administrator in writing concerning the date, time, and location of the hearing. The school board may be represented by a legal representative, if any, and the administrator shall appear and may be represented by counsel or by representative, if any. A transcript or recording shall be made of the proceedings at the hearing. A school board member or administrator is not liable for any damage to an administrator or school board member if a statement made at the hearing is determined to be erroneous as long as the statement was made in good faith.

e. The administrative law judge shall, within ten days following the date of the hearing, make a proposed decision as to whether or not the administrator should be dismissed, and shall give a copy of the proposed decision to the administrator and the school board. Findings of fact shall be prepared by the administrative law judge. The proposed decision of the administrative law judge shall become the final decision of the school board unless within ten days after the filing of the decision the administrator files a written notice of appeal with the school board, or the school board on its own motion determines to review the decision.

f. If the administrator appeals to the school board, or if the school board determines on its own motion to review the proposed decision of the administrative law judge, a private hearing shall be held before the school board within five days after the petition for review, or motion for review, has been made or at such other time as the parties agree. The private hearing is not subject to chapter 21. The school board may hear the case de novo upon the record as submitted before the administrative law judge. In cases where there is an appeal from a proposed decision or where a proposed decision is reviewed on motion of the school board, an opportunity shall be afforded to each party to file exceptions, present briefs, and present oral arguments to the school board which is to render the final decision. The secretary of the school board shall give the administrator written notice of the time, place, and date of the hearing. The school board shall meet within five days after the hearing to determine the question of continuance or discontinuance of the contract and, if the board determines to continue the administrator's contract, whether to suspend the administrator with or without pay for a period specified by the board. The school board shall make findings of fact which shall be based solely on the evidence in the record and on matters officially noticed in the record.

g. The decision of the school board shall be in writing and shall include findings of fact and conclusions of law, separately stated. Findings of fact, if set forth in statutory language, shall be accompanied by a concise and explicit statement of the underlying facts supporting the findings. Each conclusion of law shall be supported by cited authority or by reasoned opinion.

h. When the school board has reached a decision, opinion, or conclusion, it shall convene in open meeting and by roll call vote determine the continuance or discontinuance of the administrator's contract and, if the board votes to continue the administrator's contract, whether to suspend the administrator with or without pay for a period specified by the board. The record

of the private conference and findings of fact and exceptions shall be exempt from the provisions of chapter 22. The secretary of the school board shall immediately personally deliver or mail notice of the school board's action to the administrator.

i. The administrator may within thirty days after notification by the school board of discontinuance of the contract appeal to the district court of the county in which the administrative office of the school district is located.

6. The court may affirm the school board's action. The court shall reverse, modify, or grant any other appropriate relief from the school board's action, equitable or legal, and including declaratory relief, if substantial rights of the administrator have been prejudiced because the school board's action is any of the following:

a. In violation of constitutional or statutory provisions.

b. In excess of the statutory authority of the school board.

c. In violation of school board policy or rule.

d. Made upon unlawful procedure.

e. Affected by other error of law.

f. Unsupported by a preponderance of the evidence in the record made before the school board when that record is reviewed as a whole.

g. Unreasonable, arbitrary, or capricious, or characterized by an abuse of discretion or clearly unwarranted exercise of discretion.

[C77, 79, 81, §279.24]

87 Acts, ch 39, §1; 88 Acts, ch 1109, §21; 90 Acts, ch 1249, §13; 92 Acts, ch 1009, §1; 92 Acts, ch 1227, §20; 93 Acts, ch 32, §3, 4; 2001 Acts, ch 62, §2

Iowa Department of Education

TITLE II A (§1112(C)(1)(I) REGULATORY GUIDANCE

September, 2009

This document is intended for use by public school districts needing guidance in developing strategies to ensure that poor and minority students are not taught at a higher rate than other students by inexperienced (a beginning teacher who does not have at least two years of teaching experience), unqualified (a person who has not completed an approved teacher preparation program and who does not qualify for an Iowa teaching license), or out-of-field teachers (a person who is licensed to teach in one subject area but is teaching in another subject area for which the person is not licensed). In the past, Iowa schools have typically used Title II, Part A funds for either class size reduction or limited professional development activities. This guidance is intended to expand current practices for the Title II, Part A program. Title II, Part A funds may be used to support strategies implemented by Iowa schools to lead teachers to the highly qualified status.

Consider the following suggestions in addressing this issue:

- Monitor and identify classrooms with certified and experienced teachers in high-poverty schools and provide them with incentives and assistance. Consider the following suggestions for supporting certified and experienced teachers, as well as to increase the number of certified and experienced teachers:
    - Ensure a district-wide procedure is in place to review enrollment rates of poor and minority students assigned to inexperienced, unqualified, or out-of-field teachers.
    - Establish a procedure to avoid placing first and second year teachers in high-poverty classrooms.
    - Provide financial incentives to highly qualified teachers who hold an assignment in a high-poverty classroom.
    - Provide financial support for an inexperienced or unqualified teacher to complete professional development leading to highly qualified status. If the teacher is not meeting one of the Iowa teaching standards, for example- classroom management, then Title II, Part A funds could be used for this person to learn additional strategies to improve the teacher's classroom management skills. Because of this professional development, the teacher then meets the Iowa teaching standard for classroom management and is recommended for a standard teaching license.
    - Provide other school-based incentives such as additional planning periods, professional development days, and assigned support staff.

- Decrease the number of highly qualified teachers who are teaching out-of-field through various strategies. For example, consider reassignment or sharing teachers with another district. It might be beneficial to provide financial support to complete college course work in a subject area. Perhaps Title II, Part A funds could be used as an incentive for someone to complete additional math credits to obtain the math endorsement. Additional consideration may be given for participation in distance learning through the Iowa Communications Network or other technologies.

- Increase teacher retention rates for less experienced teachers by paying for an additional year of mentoring and induction programs so they stay in their original school, or at least in the

profession. Title II, Part A funds could also be used to repay a portion of the college loans for each year the person continues to teach in that school district.

- As an administrative team review the hiring process to ensure the process is not contributing to poor and minority students being taught at a higher rate than other students by inexperienced, unqualified, or out-of-field teachers. For example, review the application, interview process, selection and placement decisions, and mentoring and induction program.

Contact:
Marietta Rives, Consultant
Bureau of Teaching and Learning Services
Iowa Department of Education
515-281-8278
Marietta.rives@iowa.gov

Kevin, Del, Jim, and Marietta:

Site Visit Team Leaders will include a statement in each report, either a strength statement or a recommendation. Sample statements are as follows:

Strength:
The district reported the use of strategies that ensure poor and minority students are not taught at a higher rate than others students by inexperienced, unqualified, or out-of-field teachers. Examples included . . . . . .

Recommendation:
The district is expected to develop strategies to ensure that poor and minority students are not taught at a higher rate than other students by inexperienced, unqualified, or out-of-field teachers. The district might consider the following suggestions:

- Monitor and identify classrooms with certified and experienced teachers in high-poverty schools and provide them with incentives and assistance. Consider the following suggestions for supporting certified and experienced teachers, as well as to increase the number of certified and experienced teachers:
    - Ensure a district-wide procedure is in place to review enrollment rates of poor and minority students assigned to inexperienced, unqualified, or out-of-field teachers.
    - Establish a procedure to avoid placing first and second year teachers in high-poverty classrooms.
    - Provide financial incentives to highly qualified teachers who hold an assignment in a high-poverty classroom.
    - Provide financial support for an inexperienced teacher to complete professional development leading to highly qualified status.
    - Provide other school-based incentives such as additional planning periods, professional development days, and assigned support staff.
- Decrease the number of highly qualified teachers who are teaching out-of-field through various strategies. For example, consider reassignment, sharing teachers with another district, or distance learning through the Iowa Communications Network and other technologies.
- Increase teacher retention rates for less experienced teachers through mentoring and induction programs so they stay in their original school, or at least in the profession.
- As an administrative team review the hiring process to ensure the process is not contributing to poor and minority students being taught at a higher rate than other students by inexperienced, unqualified, or out-of-field teachers. For example, review the application, interview process, selection and placement decisions, and mentoring and induction program.

Talent to Teach, Lead and Change: Project TQ(3)

proposal for a
Teacher Quality Partnership Grant

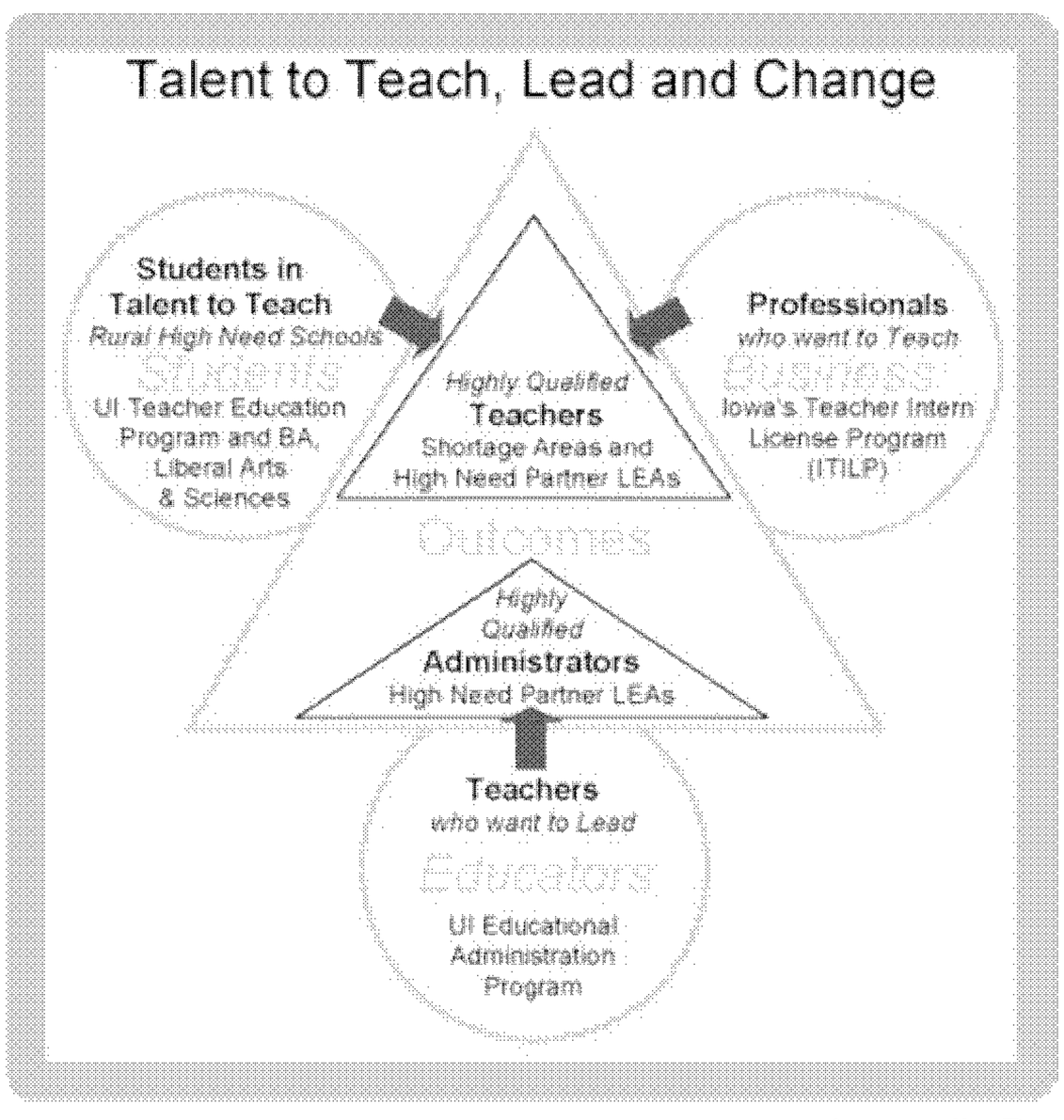
> **"In a global economy where the most valuable skill you can sell is your knowledge, a good education is no longer just a pathway to opportunity-it is a pre-requisite. The countries that out teach us today will out compete us tomorrow."**
>
> *President Barack Obama, (2009)*

ABSTRACT: *Project TQ(3): Developing a Pool of Diverse and Highly Qualified Teachers and Administrators for Iowa's Rural Students* [TQ(3)] is a new initiative by The University of Iowa (UI) College of Education to increase student achievement in Iowa's K-12 schools by developing highly qualified teachers. The UI College of Education is partnering with the UI College of Liberal Arts and Sciences (CLAS), UI Division of Continuing Education, UI Center for Enrichment and Diversity, the Iowa Department of Education, William Penn University, Iowa's ten Area Education Agencies, Rockwell Collins, Dardis Communications, and 48 qualified LEAs and 63 schools in Iowa. This project addresses the critical need for highly qualified teachers in shortage areas (i.e. Math Education, Science Education, Special Education, ESL/ELL, and Literacy) and administrators to work in high-need rural schools in Iowa. Project TQ(3) will develop an integrated system for the identification and development of teacher and administrator talent, generating a diverse pool of future teachers and administrators prepared to work in Iowa's high-need rural LEAs.

Project TQ(3) has three strands: 1) **Talent to Teach** (serving a. teacher candidates and b. para-educators), 2) **Talent to Lead** (serving teachers qualified to become administrators), and 3) **Talent to Change** (serving second career professionals to become teachers). Each strand has similar objectives: 1. **Identify** a pool of underserved candidates to teach in high-need schools; 2. **Recruit** participants to enroll in UI and William Penn University's' teacher preparation programs, UI's Educational Administration program or the Iowa Teacher Intern License Pathway (ITILP Residency) Program; 3) **Graduate/License** 80% of the participants in each strand as highly qualified teachers/administrators, 4) **Place** 80% of participants in high-need rural LEAs within one year of graduation/licensure, and 5) **Retain** teachers/administrators in high-need rural schools for a minimum of three years. TQ(3) project staff will recruit 480 participants from Iowa into the three strands in distinct cohorts beginning in Fall 2011: pre-service teachers (25/year); para-educators (25/year); second career professional (20/year) and teachers to administrators (25/year). To achieve project objectives, program activities include aggressive recruitment, active mentorship, and the delivery of high quality professional development support.

Project outcomes include: 1) increased numbers of highly qualified diverse teachers/administers in Iowa's high-need rural schools, 2) increased retention of highly qualified diverse teachers/administrators, 3) increased number of diverse licensed teachers in shortage areas, 4) broader collaboration between partners to identify, recruit, train, mentor and provide on-going professional development for future teachers, and 5) improved student achievement. Finally, this project will create a new model of teacher/administrative preparation that includes scaffolded supports to maximize participant success.

Project TQ(3) will develop a sustainable infrastructure for identifying and developing teacher and administrator talent, expand dramatically Iowa's pool of diverse and highly qualified teachers and administrators and positively impact achievement in Iowa's K-12 schools. Project partners will recruit and mentor participants, develop and deliver quality programming. UI faculty and staff will provide curricular support, professional development and technology training to all participants. The Iowa Department of Education will provide mentoring and induction support. A rigorous evaluation design will provide information about the project's efficacy and inform practice in how to develop diverse highly qualified teachers and administrators prepared to serve in high-need rural schools. The combination of expertise, commitment and resources of TQ(3) will have a significant impact on student achievement in Iowa.



The Iowa Professional Development Model
Training Manual

The Iowa Professional Development Model (IPDM) described in this training manual is a collaborative effort of the Iowa Department of Education and a stakeholders group representing area education agencies (AEAs), professional organizations (teachers, administrators, school boards), local education agencies (LEAs), higher education, and other providers of professional development in the state of Iowa. The model reflects their study, collaboration, reflection and negotiation and provides an invaluable roadmap to the conduct of staff development for educators in Iowa.

To access all the parts of the IPDM training manual on this site, you may click on the links in the left column below. Additionally, to explore the components of the model itself, you may click on components shown on the graphic. The manual is offered in two formats: .doc files are helpful for customizing manual pages for your school, and .pdf* files are preferred for reliable printing.

Parts of Manual

- **Front**
(Leads to pdf* file including list of officials, Table of Contents, and a background statement)

- **Part 1**
(Leads to web page for "Introduction to Training," individual related Tools, and links to video segments)

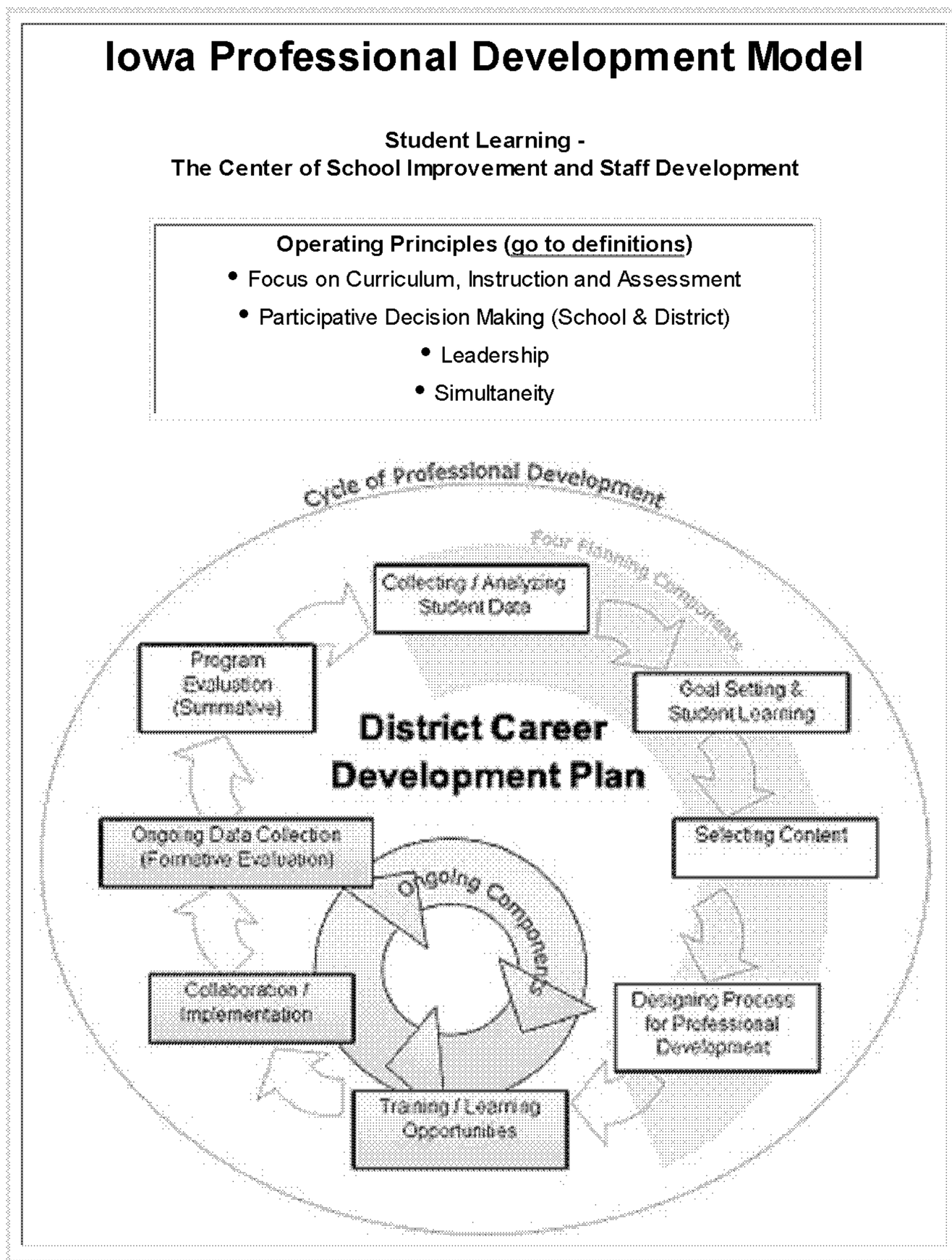
- **Part 2**
(Leads to web page for "Tour of the Model Components," individual related Tools, and links to video segments)

- **Part 3**
(Leads to web page for "Iowa Standards for Professional Development and Teaching," individual related Tools, and links to video segments)

- **Part 4**
(For high speed internet connections: leads to large pdf* file, 958K, of all "Tools and Resources")

- **Case Studies**
(Leads to case studies about model implementation in schools/districts)

- **References / Works Cited**
(Leads to pdf* file)



- **Video segments**
(Leads to Windows Media and RealPlayer video files as well as transcripts in doc and pdf* files)

Revised 2/8/05

For more information, contact:
Deb Hansen, Professional Development Consultant for Teacher Quality
Iowa Department of Education, Grimes State Office Building
Des Moines, IA 50319-0146
Deb.Hansen@iowa.gov

Iowa Department of Education
http://www.state.ia.us/educate/

Photo sources:
For student full-face images, parental releases are on file.
Several public domain photos in the cover page collage are cropped for size from the online NCRS Photo Gallery (USDA);
NCRS photographers: Lynn Betts, Tim McCabe, Ron Nichols, Keith Weller.
Two collage photos are cropped from college general activity photos.

Manual and Website formats: Diane Gere Associates

*To update your Adobe Reader for pdf files, go to the Adobe website to download the free software.

The Iowa Professional Development Model
Operating Principles

Return to Manual Home

- **Focus on Curriculum, Instruction, and Assessment**

A clear focus on instruction is essential. Deliberate alignment of instruction, curriculum, and assessment increases the likelihood that professional development efforts will be effective. If the goal is increased student achievement, use the most powerful tools over which the school has control.

- **Participative Decision Making**

Collective action requires a democratic process. Teachers are engaged in decision making and planning for professional development that is aligned with identified student needs. Communication and governance processes are in place to increase the likelihood that decisions made about staff development are binding. When professional development decisions affect a group (rather than an individual), group members must participate in those decisions.

- **Leadership**

Strong leaders are essential for successful professional development efforts. Leaders facilitate the engagement of all faculty members responsible for instruction, address time and resource issues and balance both the pressure and support required to sustain professional development efforts as a priority. For leadership to be pervasive and intense enough to make things happen at the district, building, and classroom levels, it must be distributed through the organization - involving the school board, central office administration, building-level administration, and teachers. Collective professional development aimed at student learning goals requires focused leadership.

- **Simultaneity**

Schools and districts often have to attend to multiple concerns simultaneously. Professional development efforts balance the resources directed toward and the efforts invested in content, context and processes. To accomplish student achievement gains, focusing on new content is the priority but simultaneously issues of context and process may also need to be addressed. Select a priority in which to invest professional development time and resources and then seek ways to integrate other concerns without losing focus on the major initiative. If multiple initiatives receive equal effort, the probability of succeeding with any of them is reduced.

Training Manual Home | **Front** | Part 1 | Part 2 | Part 3 | Part 4 (large pdf file) | Case Studies | References / Works Cited

rev. 9/28/04

For more information, contact:
Deb Hansen, Professional Development Consultant for Teacher Quality
Iowa Department of Education, Grimes State Office Building
Des Moines, IA 50319-0146
Deb.Hansen@iowa.gov

Iowa Department of Education
http://www.state.ia.us/educate/

*To update your Adobe Reader for pdf files, go to the Adobe website to download the free software.

284.5 Beginning teacher mentoring and induction program.

1. A beginning teacher mentoring and induction program is created to promote excellence in teaching, enhance student achievement, build a supportive environment within school districts and area education agencies, increase the retention of promising beginning teachers, and promote the personal and professional well-being of teachers.

2. The state board shall adopt rules to administer this section.

3. Each school district and area education agency shall provide a beginning teacher mentoring and induction program for all teachers who are beginning teachers, and notwithstanding section 284.4, subsection 1, a school district and an area education agency shall be eligible to receive moneys under section 284.13, subsection 1, paragraph *"b"*, for purposes of implementing a beginning teacher mentoring and induction program in accordance with this section.

4. Each school district and area education agency shall develop an initial beginning teacher mentoring and induction plan. A school district shall include its plan in the school district's comprehensive school improvement plan submitted pursuant to section 256.7, subsection 21. The beginning teacher mentoring and induction plan shall, at a minimum, provide for a two-year sequence of induction program content and activities to support the Iowa teaching standards and beginning teacher professional and personal needs; mentor training that includes, at a minimum, skills of classroom demonstration and coaching, and district expectations for beginning teacher competence on Iowa teaching standards; placement of mentors and beginning teachers; the process for dissolving mentor and beginning teacher partnerships; district organizational support for release time for mentors and beginning teachers to plan, provide demonstration of classroom practices, observe teaching, and provide feedback; structure for mentor selection and assignment of mentors to beginning teachers; a district facilitator; and program evaluation.

5. A beginning teacher shall be informed by the school district or the area education agency, prior to the beginning teacher's participation in a mentoring and induction program, of the criteria upon which the beginning teacher shall be evaluated and of the evaluation process utilized by the school district or area education agency.

6. Upon completion of the program, the beginning teacher shall be comprehensively evaluated to determine if the teacher meets expectations to move to the career level. The school district or area education agency that employs the beginning teacher shall recommend for a standard license a beginning teacher who is determined through a comprehensive evaluation to demonstrate competence in the Iowa teaching standards. A school district or area education agency may offer a beginning teacher a third year of participation in the program if, after conducting a comprehensive evaluation, the school district determines that the teacher is likely to successfully complete the mentoring and induction program by the end of the third year of eligibility. A teacher granted a third year of eligibility shall develop a teacher's mentoring and induction program plan in accordance with this chapter and shall undergo a comprehensive evaluation at the end of the third year. The board of educational examiners shall grant a one-year extension of the beginning teacher's initial license upon notification by the school district that the teacher will participate in a third year of the school district's program.

7. If a beginning teacher who is participating in a mentoring and induction program leaves the employ of a school district or area education agency prior to completion of the program, the school district or area education agency subsequently hiring the beginning teacher shall credit the beginning teacher with the time earned in the program prior to the subsequent hiring.

8. If the general assembly appropriates moneys for purposes of this section, a school district or area education agency is eligible to receive state assistance for up to two years under this section

for each teacher the school district or area education agency employs who was formerly employed in an accredited nonpublic school or in another state as a first-year teacher. The school district or area education agency employing the teacher shall determine the conditions and requirements of a teacher participating in a program in accordance with this subsection. The school district or area education agency that employs the teacher shall recommend the teacher for an educational license if the teacher, through a comprehensive evaluation, is determined to demonstrate competence in the Iowa teaching standards.

2001 Acts, ch 161, §6; 2001 Acts, ch 177, §4, 15; 2002 Acts, ch 1152, §13; 2003 Acts, ch 180, §41; 2003 Acts, ch 182, §15; 2006 Acts, ch 1182, §12

284A.5 Beginning administrator mentoring and induction program.

1. A beginning administrator mentoring and induction program is created to promote excellence in school leadership, improve classroom instruction, enhance student achievement, build a supportive environment within school districts, increase the retention of promising school leaders, and promote the personal and professional well-being of administrators.

2. The department, in collaboration with other educational partners, shall develop a model beginning administrator mentoring and induction program for all beginning administrators.

3. Each school board shall establish an administrator mentoring program for all beginning administrators. The school board may adopt the model program developed by the department pursuant to subsection 2. Each school board's beginning administrator mentoring and induction program shall, at a minimum, provide for one year of programming to support the Iowa standards for school administrators adopted pursuant to section 256.7, subsection 27, and beginning administrators' professional and personal needs. Each school board shall develop an initial beginning administrator mentoring and induction plan. The plan shall describe the mentor selection process, describe supports for beginning administrators, describe program organizational and collaborative structures, provide a budget, provide for sustainability of the program, and provide for program evaluation. The school board employing an administrator shall determine the conditions and requirements of an administrator participating in a program established pursuant to this section. A school board shall include its plan in the school district's comprehensive school improvement plan submitted pursuant to section 256.7, subsection 21.

4. A beginning administrator shall be informed by the school district or the area education agency, prior to the beginning administrator's participation in a mentoring and induction program, of the criteria upon which the administrator will be evaluated and of the evaluation process utilized by the school district or area education agency.

5. By the end of a beginning administrator's first year of employment, the beginning administrator may be comprehensively evaluated to determine if the administrator meets expectations to move to a standard administrator license. The school district or area education agency that employs a beginning administrator shall recommend the beginning administrator for a standard license if the beginning administrator is determined through a comprehensive evaluation to demonstrate competence in the Iowa standards for school administrators adopted pursuant to section 256.7, subsection 27. A school district or area education agency may allow a beginning administrator a second year to demonstrate competence in the Iowa standards for school administrators if, after conducting a comprehensive evaluation, the school district or area education agency determines that the administrator is likely to successfully demonstrate competence in the Iowa standards for school administrators by the end of the second year. Upon notification by the school district or area education agency, the board of educational examiners shall grant a beginning administrator who has been allowed a second year to demonstrate competence a one-year extension of the beginning administrator's initial license. An administrator granted a second year to demonstrate competence shall undergo a comprehensive evaluation at the end of the second year.

2006 Acts, ch 1182, §29
C2007, §284A.2
2007 Acts, ch 108, §51 - 53, 61
CS2007, §284A.5

Formative Assessment

Assessment for *Learning*

Outcome of the Project

The Assessment *for* Learning project will build capacity for Iowa educators and students to use assessment *for* learning (formative assessment) as a planned process in which assessment-elicited evidence is used by teachers to adjust ongoing instructional practices and by students to adjust current learning tactics.

Description

Assessment *for* Learning is a characteristic of effective instruction as defined by the Iowa Core Curriculum. As defined by the Iowa Department of Education, it is a process used by teachers and students as part of instruction that provides feedback to adjust ongoing teaching and learning to improve students' achievement of core content. As assessment *for* learning, formative assessment practices provide students with clear learning targets, examples and models of strong and weak work, regular descriptive feedback, and the ability to self-assess, track learning, and set goals.

As such, assessment for learning:

- is a PLANNED process.
- is used by both teachers and students.
- takes place DURING instruction.
- provides assessment-based feedback to both teachers and students.
- helps teachers *and* students make adjustments that will improve student achievement.

The practice includes the following:

- providing clear (student-friendly)learning targets (learning objectives) based on teacher understanding of the learning progression for the learning target and accompanied by models of both high and low quality work,
- providing descriptive feedback to help the student know what was done correctly and what could be done to improve,
- allowing for self- and peer-assessment for students to think meta-cognitively and develop understanding of effective learning tactics,
- creating a classroom climate of collaboration – a partnership in the learning process.

Professional Development

Year 1:

Stakeholders

- AEA Assessment *for* Learning Lead Consultants
- LEA Lead Teams consisting of a district or building administrator and 2–3 classroom teachers

Expectations

- All participants will have a deep understanding of each attribute of assessment *for* learning as an instructional process.
- All participants will be prepared to facilitate professional development in assessment *for* learning following a defined professional development sequence.

Time commitments

- Attendance at 8 days of face-to-face professional development in Des Moines on August 5 & 6, October 13 & 14, January 13 & 14, and March 10 & 11. Delivery is in 8 modules.
- Participation in a minimum of 75 minutes of professional development in a professional learning community for each module delivered face-to-face. These are to occur at the discretion of the participants following the module delivery sessions.
- Participation in 4 to 8 one-hour webinars designed to support learning occurring in both the modules and the PLCs. (All participants will attend 4 webinars. AEA Consultants and building/district administrators will attend an additional 4 webinars to support systemic leadership in assessment *for* learning facilitated by national leaders.)
- Participation in a statewide online social network and Google Doc site to support learning and share resources.

Duration over time

The 60 to 64 hours of professional development in Year 1 is for those AEA consultants and LEA Lead Teams charged with providing professional development to other Iowa educators in assessment for learning. The professional development sequence for the 60 to 64 hours is being developed through collaboration with Margaret Heritage, Assistant Director for Professional Development at the National Center for Research on Evaluation, Standards and Student Testing (CRESST) at UCLA. It will begin August 5, 2009, and provide continuing support for participants through, at minimum, the summer of 2011. In the first year the participants will develop/enhance their capacity to deliver professional development in assessment for learning. In Year 2, these participants will continue to receive support from DE Consultants and from national experts as they deliver professional development to AEA Consultants, school administrators, and classroom teachers. Those participants choosing to engage in facilitating online professional development in assessment for learning will receive additional training in facilitating online courses beginning in the summer of 2010.

Year 2+ (In some AEAs this will begin second semester during the 2009–10 school year.)

Stakeholders

LEA educators from districts where the characteristic of effective instruction, assessment *for* learning, has been identified as a professional development need using data collected through implementation of the Iowa Professional Development Model or as a part of the Self Study conducted during the development of the Iowa Core Curriculum Implementation Plan.

Expectations

- All participants will have a deep understanding of each attribute of assessment *for* learning as an instructional process.
- All participants will provide evidence of the use of assessment *for* learning practices during instruction.

Time commitments

- Attendance in a combined minimum of 50 hours of professional development that includes face-to-face or optional online workshops and structured professional learning communities.
- Participation in webinars and online social networks with national experts.

Duration over time

The 50 hours of professional development will be structured through a professional development sequence developed through collaboration with Margaret Heritage, Assistant Director for Professional Development at the National Center for Research on Evaluation, Standards and Student Testing (CRESST) at UCLA. The duration of the sequence will be at the discretion of the LEA. Ongoing support will be provided through webinars with national experts, through a statewide social network (NING), and a repository for learning progressions sponsored by AEA 8.

Current implementation

Because this is Year 1 of implementation, the intent is for each AEA to send those consultants who will be providing the professional development to LEAs on assessment *for* learning with one LEA team. The Urban 8s may also send a team consisting of an AEA Consultant, district/building administrators and 2–3 classroom teachers (5-person teams).

Results

Because this is Year 1 of the initiative, no data has been collected. The planning committee is working with both Mid-Continent Research for Education and Learning (McREL) and REL Midwest at Learning Point Associates to develop a program evaluation. McREL will develop formative assessment activities and module evaluations to inform the content of each webinar. Learning Points Associates will assist the planning committee in defining research questions and both a pre- and post- participant survey.

Additional Resources

Black, P. J., & Wiliam, D. (1998). Inside the black box: Raising standards through classroom assessment. *Phi Delta Kappan, 80*(2), 139–148.

Heritage, M. & Anderson, C. (2009). Laying the groundwork for formative assessment. Peer reviewed paper presented at the American Educational Research Association 2009 National Conference. San Diego, CA.

Leahy, S. & Wiliam, D (2009). From teachers to schools: scaling up professional development for formative assessment. Peer reviewed paper presented at the American Educational Research Association 2009 National Conference. San Diego, CA.

McManus, S. (2007). Attributes of effective formative assessment. Paper prepared for the Formative Assessment for Teachers and Students (FAST) State Collaborative on Assessment and Student Standards (SCASS) of the Council of Chief State School Officers (CCSSO).

Summary

Improving the nation's public schools is one of the highest priorities of America's federal, state, and local governments. Among the imperatives gaining attention in recent years is the need to develop school leaders who are capable of exercising more vigilance over instruction and developing an institutional culture that supports effective teaching practices. To catalyze improvements in student learning, many states have enacted new leadership standards for principals and revised criteria for leader training programs. Districts, too, have begun to pay more heed to their own human resource pipelines by establishing programs to train aspiring principals and to develop the skills of mid-career principals. Recent research supports these efforts by finding that the quality of the principal is, among school-based factors, second only to the quality of the teacher in contributing to what students learn in the classroom (Leithwood et al., 2004).

These achievements, however, are not likely to have their desired effect if new policies and initiatives are inconsistent with other state and district policies affecting school leadership. If, for example, new leadership standards are implemented by the state but fail to influence the curriculum of professional preparation programs, they will have only marginal impact. And if principals receive strong leadership training aligned with standards but find that they have little authority over their school budgets or hiring, they will not be able to put the best practices they have learned into effect at their schools.

The Wallace Foundation, which has focused its grantmaking in education primarily on school leadership, has long recognized the need for more-coordinated state and district policies in this area. The Foundation's grants to states and districts over the past nine years have been designed to overcome the isolation of targeted reforms and to forge policy connections that could lead to more-cohesive and high-performing systems. The working hypothesis, or theory of action, behind these investments is that a cohesive leadership system (CLS), defined as well-coordinated policies and initiatives across state agencies and between the state and its districts, will increase the ability of principals to improve instruction in their schools. In particular, the hypothesis holds that coordinating the development of leadership standards, high-quality training, and the conditions that affect principals' work (such as access to data and sufficient

resources) will facilitate successful school leadership and support improved teaching and student learning. The Foundation commissioned RAND to document the results of its initiative and in the process to examine this hypothesis.

Study Purpose and Approach

This study had three objectives:

1. To document the actions taken by Wallace Foundation grantees to create a more cohesive set of policies and initiatives to improve instructional leadership in schools
2. To describe how states and districts have worked together to forge more-cohesive policies and initiatives around school leadership
3. To examine the hypothesis that more-cohesive systems do in fact improve school leadership.

To document what the grantees at selected sites had accomplished, the RAND research team addressed three questions:

1. What policies and initiatives have states and districts pursued to improve school leadership?
2. How are the states and districts interacting to improve school leadership?
3. To what extent have they built cohesion among school leadership policies and initiatives?

To describe system development, we addressed several other questions, including, What strategies have sites used to build CLSs and why are some sites more cohesive than others? And how are sites attempting to scale up and sustain their work?

The third objective—examining The Wallace Foundation's hypothesis—proved to be a difficult analytic challenge. Linking improved cohesion with student outcomes was beyond the scope of this two-year project. We chose instead to focus on the link between the conditions within which principals work and their reports on (and satisfaction with) time spent on specific instructional practices.

We performed a cross-case analysis, using a purposive sample of 10 Wallace grantee sites consisting of 10 states and their 17 affiliated districts. Before conducting site visits, we reviewed the literature on system-building and policy coherence and developed an understanding of the indicators of cohesive systems that we used to structure, compare, and interpret our findings. We then conducted site visits during which we interviewed 300 representatives of districts, state government, and pre-service principal preparation programs. We also fielded a survey of more than 600 principals and collected information in an online log in which nearly 170 principals described how

they spent their time every day for two weeks. We supplemented this information by interviewing 100 principals.

Results

The study found that it is possible to build more-cohesive leadership systems and that such efforts appear to be a promising approach to developing school leaders engaged in improving instruction. Perhaps the most useful result of the analysis is our account of the strategies state and district actors have devised to build stronger working relationships and greater cohesion around policies and initiatives to improve education. By identifying those sites that had built more-cohesive systems, we were able to compare their strategies and historical contexts with those of sites that had not yet achieved fully cohesive systems. In this way, we were able to identify effective approaches to this work and local conditions that fostered success. These findings should be useful to others building statewide systems to improve education. Although we could not provide evidence that the full underlying theory behind the Wallace initiative is sound, we did find a correlation between improved conditions for principals and their engagement in instructional practices.

What Are States and Districts Doing to Improve School Leadership?

Policies and initiatives. All the study sites had done something to improve school leadership. Their efforts were focused on six areas: standards, pre-service and recruitment, licensure, evaluation, in-service, and the conditions in which principals work. The policies and initiatives differed across sites in their focus, scope, stage of implementation, and the degree to which they challenged the status quo. We found that states and districts were equally likely to be engaged in this work. We also found that state and district domains of responsibility were converging. For example, states we studied were mandating evaluation systems and professional development for principals, which used to be primarily the domain of districts. Conversely, districts were developing their own pre-service programs (on their own, in partnership with local universities, or in partnership with nontraditional providers), a domain once dominated by state government.

Roles and interactions. We observed two patterns of interaction across the sites. In one, districts were, for the most part, improving school leadership on their own, without support or intervention from the state. In the other, the state was clearly the leader, with districts involved in primarily reactive ways. Kentucky was an exception; there, the school district and the state were equal partners in improving school leadership at the district and state levels. In Kentucky, and in some other sites falling into one of the two patterns above, the state was adept at identifying, supporting, and spreading good practices that were developed at the district level.

Degree of cohesion. We use the term *cohesion* to describe systems built in concert by the state and its affiliated districts. We identified sites with more- and less-advanced CLSs so that we could determine which strategies and contexts seemed to be beneficial in this work. Our analysis of interview data indicated that three sites—Delaware, Iowa, and Kentucky—had the most advanced CLSs at the time of our research. Compared with other sites, they exhibited all five characteristics we identified as present in highly cohesive leadership systems: comprehensiveness in the scope of their initiatives, alignment of policies and practices, broad stakeholder engagement, agreement on how to improve leadership, and coordination achieved through strong leadership. We also determined that although districts and states were equally likely to be taking action to improve leadership, states tended to lead efforts to build CLSs.

How Have Sites Built Cohesive Leadership Systems?

States, rather than districts, have played the key role in creating connections among state and district policies and initiatives on leadership. State agencies are better positioned than districts to foster broad stakeholder engagement and agreement among stakeholders, coordinate initiatives, and ensure statewide alignment of resulting policies. Organizations with a statewide purview are also more aware of other education reforms and how leadership improvements can be integrated into the broader agenda. A comparison of lead organizations, strategies, and contextual factors highlighted some important differences among state efforts.

Organizations leading efforts. Sites differed a great deal in the organizations that assumed the lead role in developing cohesiveness. In some sites, it was the state education agency (SEA); in others, it was a university or a professional association; in still others, a large district was an equal partner in the work. There appeared to be no "best" approach: The appropriate constellation of actors depended on the local context, including who had the power, capacity, and inclination to move the work forward.

In the sites with more-cohesive systems (Delaware, Iowa, and Kentucky), the lead agency was chosen strategically. For example, state leaders assessed the internal capacity of their own SEAs, taking into account whether staff would be able to think and work outside the boundaries created by categorical federal programs and the overall credibility of the SEA and its political priorities. These sites proactively developed distributed systems of leadership with key roles assigned to different types of organizations, including SEAs, universities, leadership academies, professional associations, regional education offices, and districts.

Strategies used to build cohesion. Interview data suggested that eight strategies were the most important for building cohesion:

1. Building trust
2. Creating formal and informal networks
3. Fostering communications

4. Exerting pressure and influence
5. Promoting improved quality of leadership policies and initiatives
6. Building capacity for the work
7. Identifying strong individuals with political and social capital to lead the work
8. Connecting to other reform efforts.

The sites with the most-cohesive leadership systems shared several distinctive approaches to implementing these strategies. First, unlike other sites, they were pursuing all eight strategies and working more intensively than others on three strategies in particular: building organizational capacity to accomplish the work, identifying leaders with strong social and political capital, and connecting the efforts on leadership improvement to other reform efforts in the state. Leaders who can connect school leadership reforms with other education initiatives in their states help build sustainability for their efforts and may reduce burdens on districts and schools. Also, in Delaware, Iowa, and Kentucky, distributed leadership systems were built with key state-level organizations, as described above.

Second, leaders in these states pursued strategic communications. Delaware and Iowa routinely gathered key state and district leaders into the same room to both learn about leadership and develop policies and initiatives to improve it. Kentucky accomplished the same goals in a serial fashion by holding town hall meetings throughout the state that were credited with creating "learning systems for leadership."

Third, all three sites combined pressure tactics and support in effective ways. In Kentucky, for example, to create an incentive for all higher education institutions to engage in pre-service redesign, Jefferson County Public Schools (JCPS) and the Department of Education sought approval from the State Board of Education to design their own program, applying pressure that succeeded in making the universities more active partners in the process. But Kentucky did not rely on pressure alone: CLS leaders also offered support for the redesign process in a number of ways.

Contextual factors that promoted or hindered the work. Interviewees reported a range of factors that enabled or inhibited efforts to build cohesion:

Enabling factors

- Common structures and policies
- A history of collaboration
- Strong preexisting social networks
- Participation of nontraditional actors
- Funding and technical assistance from The Wallace Foundation
- Political support
- Supportive, stable, and aligned superintendents and school boards

Inhibiting factors

- Limited resources
- Limited SEA capacity
- Turnover of key staff
- Too many organizations, too far apart
- Cultures of independence
- Discord across organizations
- Reform overload

Sites with the strongest record in building cohesion shared a number of enabling factors and were less limited by inhibiting factors. Delaware and Iowa both had a history of relatively positive relationships among deeply networked state-level stakeholders, as well as a history of collaboration among them. Although Kentucky did not have a history of positive collaboration between state and district actors, the Wallace funding and technical assistance created the opportunity for leaders from the SEA and JCPS to work collaboratively.

These sites also enjoyed a higher and more consistent level of political support than other sites in our sample. All three states have a history of activism in education reform, and their political leaders have long shared a commitment to school reform which created fertile ground for leadership initiatives.

Finally, the three sites were collectively less likely to face some of the key barriers to building a cohesive system, such as staff turnover, a culture of independence, or discord across organizations. Other barriers, however, were present, including limited resources and SEA capacity, organizations that were geographically far apart, and, in the case of Kentucky, a history of discord across organizations. We found some evidence that these three sites were more resourceful than others in developing strategies to overcome contextual challenges such as limited SEA capacity and a history of discord. Less-cohesive sites showed more limited capacity—and perhaps more limited will—to overcome such obstacles.

Sustaining and scaling up the work. Our interviews suggested that in more-cohesive sites, the CLS initiative is likely to continue beyond the period of Foundation support. Although many interviewees described challenges to sustaining this work once funding and technical assistance ends—challenges such as insufficient time, staff, and resources and the eventual loss of dynamic leaders—they also described creative strategies they were adopting to sustain and build on their achievements, including passing legislation, embedding the initiative into their state's education agenda, and vesting future leadership of the initiative in organizations outside government to help shield it from political changes in SEAs.

Many interviewees felt that their success in creating cohesion provided in itself some assurance that the initiative would survive. In some states, leaders felt their efforts had reached the point of no return: They had established bonds among people and

agencies, a common language and vision, and widespread commitment to the goal of improving school leadership.

Did We Find Support for the CLS Hypothesis?

We were not able to determine whether more-cohesive systems were correlated with the ability of principals to spend more time on practices that are reported to be effective in improving the quality of instruction. However, we did find that principals reporting favorable conditions also reported that they spent more time on a series of instructional leadership practices. Our analysis does not provide evidence of causation—there could be other explanations for this correlation—nor can we demonstrate that principals spending more time on these practices has improved student learning. But our findings do offer some support for the theory that positive conditions for principals promote stronger instructional leadership.

Recommendations

Our study findings provide some practical lessons drawn from the experiences of the hundreds of people we interviewed. Although we focus on lessons learned about system-building to improve school leadership, our recommendations are intended to be helpful to anyone engaged in developing closer working relationships between states and districts that can result in better aligned policies for improving education.

Early Steps

Consider local contexts and address the challenges they pose. Our analysis showed that local context can work either for or against efforts to develop cohesion. Clearly, sites with a culture and history of collaboration and strong social networks are better suited for such efforts. A supportive political structure for public education reform is also important. We found that building cohesive systems under challenging conditions, such as limited resources, cultures of independence, or reform "burnout," was difficult. However, some sites found ways to surmount barriers. Other sites interested in emulating these reform efforts could closely examine their context and their capacity for them. In particular, they may want to address potential barriers before launching new reform efforts.

Identify strong lead organizations and individuals. Although lead agencies in the sites we studied varied, what the most advanced sites had in common—and what distinguished them from most others—was a strategic approach to the selection of people and organizations to lead the work. It is critical to find strong leaders who can form significant bases of power, garner political support for improving school leadership, and connect school leadership efforts to broader reform initiatives in the state. We recommend that sites determine which of their agencies or organizations is best poised

to lead the effort to develop a CLS. In particular, sites should question whether the SEA is the best choice for this role, factoring in its overall capacity and credibility and its willingness to think and work outside the boundaries created by categorical federal programs.

Capitalize on external funding and expertise. All of the sites we studied benefited from funding and technical assistance from The Wallace Foundation. However, we found that many of the sites also capitalized on diverse sources of funding, such as local foundations, both before and during the course of the Wallace funding. They also sought technical assistance from others; all of the sites engaged external organizations, such as the Southern Regional Education Board (SREB), and key experts in school leadership to help them develop their capacity to do this work. The sites also met with each other to discuss strategies for success. Although securing a level of funding similar to the amounts awarded to the Wallace grantees may be challenging, new sites could investigate local foundations and businesses as possible sources. Furthermore, the sites described in this monograph are willing to provide technical assistance and guidance to other sites embarking on this work. Prospective sites could also learn from engaging expert organizations such as The Wallace Foundation and SREB as they explore options for building more-cohesive leadership systems.

The Implementation Phase

Build trust and mend fences. Relationships between state and district actors are sometimes acrimonious. The sites we studied reported that certain approaches to building trust were useful; such approaches included acknowledging that the state and the districts were "in this together" and ensuring that state actors took the time to understand district contexts and to develop the capacity to provide useful technical assistance. A "fresh face" also had benefits: New state actors repaired previously broken relationships between district and state organizations. Sites may need to address possible trust issues before undertaking efforts to develop CLSs. Once trust has been established, it should be easier to develop common understandings, shared goals, and joint ownership of the work.

Engage a broad coalition of stakeholders. Building cohesion requires serious efforts to engage stakeholders and foster agreement. Engagement for coordination requires time and resources. Sites should recognize the importance of involving relevant stakeholders and giving them the authority to make decisions, thereby fostering buy-in. Key state and district leaders would also benefit from meeting in the same room to discuss leadership and to develop policies and initiatives for improving it.

Hone skills at applying pressure while providing support. The most successful sites in this study combined pressure with support. This strategy benefited both states and districts. Applying pressure was effective when people perceived the state as willing and able to exercise its powers, and offering support was effective only when state actors

and agencies could provide expertise that districts needed. Sites that can apply pressure while being supportive might accomplish the greatest policy reforms.

Recognize innovative districts as "lead learners." A number of innovative and sustainable policies and initiatives that began in the districts we studied spread to other districts and/or to state policy. States whose districts have made progress in improving school leadership should recognize these achievements and hold the districts up as possible models for others. State officials would benefit from partnering with such "lead learners" and creating mechanisms for scaling up relevant initiatives.

Connect school leadership efforts to standards and to other reforms in the state. Savvy leaders we interviewed knew how to link their efforts to build CLSs to other reforms in their states, such as high school and middle school reform programs. This approach helped to provide a platform from which to align policies and initiatives and appeared to foster both viability and sustainability. To bolster the success of leadership efforts, new sites could integrate leadership policies with other educational reforms in their districts and state.

Evaluation, Sustainment, and Expansion

Solidify programs and funding through legislation and regulations. Widespread and long-term reform was achieved through legislation and mandates that ensured that initiatives such as mentoring, evaluation systems, and the redesign of pre-service programs were implemented and funded. Other sites could include regulatory and funding designs in their efforts to build cohesion.

Engage in continuous learning and improvement. Leaders and organizations involved in building a CLS sought and shared expertise by participating in networks, attending conferences, and sharing ideas from research. They collected data to demonstrate that building a CLS had made a difference and to attract future funding. Other sites would benefit from similar commitments to continuous improvements.

Commit to engaging in this work over the long term. As many people told us, aligning policies and practices and building collaborative relationships between states and districts is hard work. Four of our study sites had been able to implement only a few initiatives despite receiving levels of funding and support similar to those of other, more successful sites. Even leaders in sites that have relatively advanced CLSs reported that only after nine years of effort were they beginning to see a real difference. Those who choose to embark on such an initiative should be prepared to engage in the work over the long term.

Final Thoughts

We found that it is possible to develop cohesive leadership systems between states and districts to improve school leadership, and we have identified the approaches that

appear most effective for developing such systems, as well as local conditions that create a favorable environment for this work. Although we did not attempt to prove the hypothesis that such systems improve student outcomes, we affirmed the link between principals' conditions and the time they spend on instructional leadership practices. It is our hope that this analysis will help guide other states and districts in working collaboratively toward the common goal of improving school leadership.

Project Narrative: State of Iowa Teacher Quality Partnership Grant

Introduction

The State of Iowa is fully committed to the belief that all students can learn at a high level. Iowa knows and agrees that the single most important element in improving student learning and achievement is to provide high quality teachers for every Iowa student. To realize this belief that all students can excel in learning requires a commitment to support and foster a wide array of partnerships that work together to reform and enhance Iowa's education system. If Iowa is to live by its guiding educational principle that a quality education is essential to a successful democracy, lifelong learning, and a vibrant economy, new methods must be engaged so that Iowa will best prepare teachers and leaders to serve in our schools—especially those schools who are faced with the biggest financial challenges and high teacher turnover.

Strong and Supportive Partnerships

The purpose of the Iowa Teacher Quality Partnership Grant is to forge a partnership among the Iowa Department of Education, the University of Northern Iowa, one of the state's leading teacher preparation institutions, and Dr. Raymond L. Pecheone, a nationally recognized education assessment scholar and Co-Executive Director of the Stanford University School Redesign Network to achieve the goal of significantly increased learning and achievement for Iowa's PK-12 students. The primary areas of focus provided by the plan are 1) to develop more highly effective teachers by defining emerging attributes of effective teaching and integrating those attributes into both pre-service programs and professional development for beginning and practicing teachers and 2) to examine and integrate a diverse set of teacher and student artifacts to document effective teaching featuring teacher work samples supported by an Iowa Integrated Technology Platform.

Support for this project comes from a diverse set of persons and organizations with nationally recognized expertise in this area. Formal supporters and partners include Dr. Linda Darling-Hammond (serving as principal investigator), Stanford University; Dr. Raymond L. Pecheone (serving as project director for TPA component of grant), Stanford University; Margaret Heritage, UCLA Center for Research on Evaluation, Standards, and Student Testing (CRESST); Iowa Association of School Boards; Iowa State Education Association; School Administrators of Iowa; State Board of Education and Iowa Association of Colleges of Teacher Education (IACTE).

In summary, this application meets the criteria for eligibility through a partnership developed among high-need local education agencies (LEAs), Iowa Department of Education, and institution of higher education (IHE) partner the University of Northern Iowa. Further documentation is provided in Appendix A.

A Clear Focus on Specific Grant Priorities and Competitive Preferences

This grant proposal addresses the following *absolute priorities* and *competitive preferences* which will subsequently be explained in more detail in this narrative and in the *Preferences and Invitations* attachment:

- **Absolute Priority 1: Partnership Grants for the Preparation of Teachers.** The eligible partner will carry out a reformed and enhanced effective pre-baccalaureate teacher preparation program. The grant project will be held accountable for the preparation and professional development of new and prospective teachers to understand empirically-based practice and scientifically valid research related to teaching and learning and the applicability of such practice and research including through the effective use of technology, instruction and strategies consistent with the principles of

universal design for learning positive behavioral intervention support strategies to improve student learning.

- **Competitive Preference Priority 1: Student Achievement and Continuous Program Improvement.** The eligible partner will collect and use data on student achievement to assess the effect of teachers prepared through the pre-baccalaureate teacher preparation program. Additionally, demonstrated will be capacity to provide longitudinal data capturing student achievement by teacher from year to year through the grant performance period. Applicant will provide for continuous improvement of participating teachers and of the pre-baccalaureate teacher preparation program based on longitudinal student achievement data. Relevant data would reflect the effectiveness of both teachers in the program and teachers not in the program on student learning and achievement. NOTE: Additional explanation is offered in the "Project Narrative Competitive Preference Priorities Narrative" which is attached as part of the electronic submission.
- **Competitive Preference Priority 4: Partnership with Digital Education Content Developer.** The applicant will partner with Iowa Public Television, an entity which is a partner within the structure of the Iowa Department of Education, to develop digital educational content to improve the quality of teacher preparation programs **and** enhance the equality of pre-service training for prospective teachers. NOTE: Additional explanation is offered in the "Project Narrative Competitive Preference Priorities Narrative", which is attached as part of the electronic submission.

Research Foundation for TQP Project: Developing Highly Effective Teachers and the Role of University of Northern Iowa in Developing Teacher Work Samples

The mission of the Teacher Quality Partnership Grant is to increase the learning and achievement of Iowa PK-12 students by developing more highly effective teachers. The grant will achieve this mission by tapping into the best research to assist in identifying the emerging attributes of effective teaching followed by the integration of a diverse set of teacher and student artifacts to document content knowledge of academic major and effective teaching featuring teacher work samples supported by an integrated technology platform.

The research supporting this approach is substantial. In a to-be-published book, *Improving Teacher Quality: Using the Teacher Work Sample to Make Evidence-Based Decisions* by John E. Henning, Frank W. Kohler, Victoria L. Robinson and Barry Wilson, the authors confirm that teacher work samples TWS consists of a description of a complete unit of instruction during student teaching, including the context of the unit, learning goals, a description of instructional decisions made during the lesson, a plan for assessment, a design for instruction, an analysis of student learning, and the student teacher's reflections on both learning and teaching. It should be noted that the authors were members of the ***Renaissance Group*** and leaders of the implementation effort at one of the ***Renaissance Group*** universities, the University of Northern Iowa, who is a partner in this grant project.

Initially, the TWS was introduced at the University of Northern Iowa (UNI) through a pilot project that began in 2000 and was officially adopted in 2003. The primary purpose for requiring completion of a teacher work sample was to ensure that student teachers had attained a minimal level of competency.

Over time, however, the implementation of the TWS has catalyzed a gradual series of changes. Those changes have had a widespread impact on teacher education programs in areas

that include assessment, teaching, and the revision of the TWS. Each of these changes was undertaken to better align the TWS with our program of instruction.

Emerging Role of Teacher Work Samples

The TWS originated at Western Oregon University in the 1980s under the leadership of Del Schalock. Its emergence was consonant with the shift away from the traditional view of educational assessment as objective testing and toward the increased utilization of performance-based assessments and multiple measures (Hambleton, 1996). The initial and primary purpose of the TWS was to provide authentic evidence of a minimal level of competency before receiving licensure (Schalock & Myton, 1988).

However, Girod (2002), also at Western Oregon, noted that the process of creating a TWS helped student teachers 1) develop a greater awareness of the relationship between student performance and their teaching behaviors and 2) make deeper connections between the processes of planning, teaching, and assessing student learning. The contents of Western Oregon's TWS are organized around the following sections:

Linking context to student learning

In this section of the prompt, student teachers describe the context of learning, including the school and community culture, demographics, school policies (e.g. dress code), their classroom, and their students.

Goals and objectives aligned with school, district and state goals

Goals and objectives for the instructional unit should be specific, thoughtful, and aligned with the rationale for the unit, the state and national standards, assessment strategies and the needs of students in the class.

Rationale for unit

The rationale for the unit should include an explanation of its significance, a justification for teaching it, a graphic organizer illustrating its sequence and conceptual overview and a description of the instructional decisions made when teaching it.

Pre/post assessment

Pre and post assessments should be clearly described, aligned, trustworthy, feasible, varied, and developmentally appropriate.

Lesson plans with adaptations

The lesson plans included in the TWS should be detailed and aligned, include motivational strategies, correspond with the pre and post assessments, use a variety of instructional strategies, and contain adaptations for students with special needs.

Data analysis

An analysis of student achievement data should be performed by groups (e.g., students with special needs), by clusters, by class, and for each student. The data analysis should also include a graphic display of pre/post differences and the learning gains made from pre to post assessment and an interpretive essay of the results.

Reflective essay

The TWS concludes with a reflective essay on classroom management, the evolving philosophy of the student teacher and an explication of the student teacher's personal/professional goals.

How Valid and Reliable is the TWS?

In a study by Denner, Salzman, and Bangert (2001), a group of cooperating teachers and college faculty were surveyed about the content validity of the TWS after serving as a team of expert raters during the scoring process. The expert raters consisted of nine public school

representatives, one principal and eight teachers, three of whom were Nationally Board Certified. The median years of teaching experience for this group was 18, ranging from 11 to 30 years.

When participants were asked whether the TWS represented the skills necessary for a beginning teacher, 68.8 % (n=11) said "absolutely yes," 18.8 % (n=3) said "yes," and 12.5 % (n=2) were "uncertain." When asked about the importance of these skills, the expert raters responded in the same percentages to "Critical" (68.8%), "Important" (18.8%), and "Somewhat Important" (12.5%). Finally, 68 % of the respondents agreed that practicing teachers used the tasks required by the TWS more than a few times a week.

Work on scoring reliability has been pioneered by Denner et al. (2001, 2003), who demonstrated that an acceptable level of inter-rater agreement can be achieved with as few as two raters. In another study at Western Oregon University, McConney and Ayres (1998) reported 81% to 98 % level of agreement between cooperating teachers and university supervisors when scoring the TWS.

What Makes the TWS Different from Previous Licensure Requirements?

What distinguishes the TWS from previous licensure requirements is its emphasis on improving P-12 student achievement. In contrast to National Board Certification, Interstate New Teacher Assessment and Support Consortium (INTASC), or Praxis III, the TWS provides written evidence of the student teacher's ability to have a positive impact on student learning (Girod, 2002; Schalock, Shalock, & Myton, 1998).

As part of the TWS, student teachers design a plan for collecting pre, post, and formative assessment data, and then use that data to conduct an analysis of student learning that considers the whole class, subgroups of the class, and at least two individual students.

The relationships uncovered during the analysis are included in the TWS in the form of charts, graphs, or other visual representations. Denner et al. (2001) found that if student teachers can do well on the Analysis of Student Learning, they are likely to receive a high overall score on the TWS. While student teachers at the University of Northern Iowa often feel challenged by this component of the TWS, they also express appreciation for the insights it affords. As one graduate commented, "This was a rewarding experience because I was able to prove that my students will leave third grade knowing more because of my teaching. I can make a difference."

How Can the TWS Improve Teacher Education Programs?

The data from the TWS are based directly on student achievement. Thus, they can provide programs and professors with valuable insights into the impact of their student teachers on PK-12 learning. To foster these insights, faculty members at the University of Northern Iowa teacher education are encouraged to serve as TWS scorers. Reading a completed TWS can emphasize to faculty that "coverage" is not equivalent to the deep learning needed for a successful teaching performance. The TWS also tends to reinforce the awareness that the performance of their former students—and less directly their own performance— will increasingly be viewed in light of student achievement at the P-12 level.

The initial informal readings of the TWS have gradually evolved to a system of more systematic and in-depth analysis since the rubric scores have been shared with the 240 members of the University of Northern Iowa teacher education faculty. Teacher educators are given an opportunity to review these data to determine growth areas or continued patterns of concern within their program areas and to determine specific course revisions and realignment of curriculum.

While faculty have always believed they were preparing future teachers with needed skills and knowledge to impact student learning, systematic feedback was not available regarding student strengths and weaknesses in areas such as assessment, lesson design, attention to individual difference, or reflective practice. Now professors of preparation courses have the opportunity to analyze how well the students can actually *apply* the knowledge or skills learned in the class.

The TWS is a potentially rich source of data, not only for assessing the instructional efficacy of the faculty, but also for investigating the thinking practices and professional development of pre-service teachers (McConney & Ayres, 1998). This data collection and recording is a continuous part of the University of Northern Iowa's accountability system.

Exploration within Pre-service Teacher Education

New approaches have been offered by researchers relative to pre-service education such as experiment with new TWS formats. For example, universities and school districts adopting the TWS might experiment with these variations to best meet their needs. In addition, other universities might also examine variations that are more substantial in nature. For example, perhaps the TWS could be modified to make it more relevant for special area educators, such as special education teachers, literacy specialists, or childhood teachers (PK – 2nd grade).

A second suggestion from the research is to develop new methods for preparing pre-service teachers for completing the TWS. As noted above, one of the primary purposes of the TWS is to provide evidence that program graduates are able to meet minimum competencies. Researchers suggest universities provide candidates with frequent and intensive opportunities to learn the TWS processes **before the actual student teaching experience**. A meaningful "future

direction" for teacher preparation programs is to explore additional ways to utilize TWSM during the entire preparation program.

A third suggestion is to integrate or combine the TWS with other evaluation methods. One of the primary purposes or functions of the TWS is to provide evidence that student teachers are able to meet minimum competencies. However, the TWS does not serve as the sole method of evaluation. As teacher educators examine ways to demonstrate accountability and address the standards that they operate under, the task is to find ways to have the TWS complement other measures of candidate performance and knowledge.

Extending the TWS to New Contexts

Currently, much of TWS is limited to pre-service teachers at the time of their enrollment in our teacher education program. The heaviest concentration of TWSM begins during the junior year and ends with student teaching. As teacher educators focus more on the issues of teacher induction, teacher quality, professional development, and school improvement, there may be advantages to expanding the utilization of the TWS to other contexts. The TWS possesses five traits that would make it a useful tool to facilitate reflection for other educators in contexts other than student teaching.

Extending to Graduate Students

The TWS could be implemented in a graduate program to meet a requirement for a masters paper or a culminating project. With the addition of a literature review, the TWS would have many similarities with an action research study. The Analysis of Learning section requires a similar analysis as typically performed in the Results section of a research study. Gains from pre to post assessment can be compared against existing baseline data analyzed to determine the efficacy of instructional strategies (Streifer, 2002). Similarly, the Reflection and Self-Evaluation section perform as a comparable function as the Discussion section in a study. Thus, the structure

of the TWS lends itself to the type of analytical reflection commonly done with action research studies.

Inducting Beginning Teachers

The research notes that TWS could be useful when evaluating beginning teachers by serving as evidence of teacher's ability to manage a sustained teaching performance. It would help beginning teachers focus on student learning, reflection, and improving instruction based on student performance. It would also provide a common professional language between new and mentoring teachers. A rapid acquisition of common terminology could also bring the new teacher into school improvement issues much more quickly. This would provide a smoother transition from inductee to fully functioning and participating member of the staff. It would also facilitate a seamless continuum of professional development from beginning to master teacher.

Finally, it would enable the collection of follow up data from program graduates who completed the TWS during student teaching. Implementing the TWS into the first the first 3-5 years of teaching could provide additional, relevant feedback to teacher education programs. As part of this process, it would be important to determine which measures would provide the most benefit to beginning teachers and teacher education programs.

Extending to Professional Development

Girod (2002) suggests the TWS could be expanded to include veteran teachers, perhaps to include an entire semester. Given the current interest with student achievement and standards, the TWS offers considerable potential as a practical tool for both professional development and licensure renewal among veteran teachers. Teachers could be offered Continuing Education Units (CEUs) for participating in professional development sessions.

A TWS for master teachers might look different from the Renaissance TWS for student teachers. But two essential components of TWSM would need to be preserved. Master teachers should supply evidence of student growth as well as documentation showing the alignment between their instruction and the teaching standards. Maintaining the two elements would ensure that TWSM could be adapted to serve the licensure process for practicing professionals.

The increased focus on student learning often has benefit for practice. As one cooperating teacher stated, "The TWS process helped me focus more on student learning. It was a form of professional development for me!" The authors agree and also would like to suggest it could be used as the focus of study group conversations or as a key source of data to be included in school improvement processes. Teachers could discuss the TWS a section at a time, and later score each other's TWS.

Extending to P-12 Administrators

Adopting the TWS would offer several advantages for principals. First, it would provide a coherent, performance-based assessment tool that addressed essential planning and assessment processes. Second, the seven teaching processes provide a template for principals, so they are less likely to overlook a critical component of teaching such as pre assessment. Thus, the use of the TWS would reinforce the role of the principal as an instructional leader. Iowa principals are required to receive training that could help them evaluate beginning teachers. The TWS could be used as a practice assessment tool when principals receive training to evaluate beginning teachers.

The TWS could also help principals by keeping their teachers focused on student achievement, providing a measure of professional development based on student achievement and fostering a shared language common to pre-service teachers, beginning teachers, and in-

service teachers. Thus, the TWS can enable a more seamless transition across a continuum of professional development experiences and maintain a strong connection between student achievement, professional development, and school improvement.

Role of a Digital Platform

Emphasized in this grant proposal is the need to develop an integrated technology platform that will provide a method to store artifacts of effective teaching. In addition, the platform allows for the scaling of artifact attributes. Based the research and development of Dr. Raymond Pecheone from Stanford University, a key partner in this grant project, advantages of such a platform have been explored and applied with success in other states such as California. In such as system, teacher work samples can be recorded for later review by the student, mentors, administrators and other stakeholders. The work plan and subsequent budget narrative explores the requirements to implement this platform. Also, there is an extensive discussion of the platform in the check list narrative section of this document.

Current Iowa Initiatives to Reform and Enhance Teacher Effectiveness

In addition to the national research that contributes to this project, Iowa specific initiatives serve to develop the foundation for this grant proposal. Selections of Iowa-specific research and initiatives have been placed in Appendix D of this application package for review. Initiatives include Adolescence Literacy, Authentic Intellectual Work, Concept-Oriented Reading Instruction, Cognitively Guided Instruction, Enhanced Assessment Grant –Formative Assessment, Every Child Reads, Every Learner Inquires, Every Student Counts, Instructional Decision Making, Iowa Arts Educators Mentor Program-Model of Excellence, Iowa Department of Education EdInsight Data Warehouse Project, Journey to Excellence Model Program, Our Kids, Picture Word Inductive Model, Question Answer Relationships, Second Chance Reading,

Teacher Development Academies, State Wide Reading Team, The Iowa Core Curriculum, and The Strategic Instruction Model.

Integration of Research with State of Iowa TQP Grant Proposal

The grant development team integrated much of this research into the design of the project mission, goals, and objectives. The grant will focus on developing a diverse set of teacher and student artifacts to document content knowledge of academic major and effective teaching featuring teacher work samples supported by an integrated technology platform. The purpose is to enhance and support the professional development of prospective and current teachers in Iowa and to improve decision making of evaluators, teacher and administrators in determining student growth, teacher growth and documentation of teacher effectiveness from the time an individual enters a preparation program to the time of exit of teaching.

Overview of Proposal: A Work Plan Summary

Provided below is a work plan summary which is intended to provide an overview of the mission, goals, objectives, activities, outcomes, and measures. Following the work plan summary will be discussion of the LEA schools identified for attention, details of how the partnership will support the work plan and the role of an integrated technology platform in creating higher quality teachers who will improve the educational performance of the students they teach.

PROJECT MISSION: The mission of the Teacher Quality Partnership Grant is to increase the learning and achievement of Iowa PK-12 students by developing more highly effective teachers. The grant will achieve this mission by 1) defining emerging attributes of effective teaching and integrating those attributes into both pre-service programs and professional development for beginning teachers and 2) examining and integrating a diverse set

of teacher and student artifacts to document content knowledge of academic major and effective teaching featuring teacher work samples supported by an integrated technology platform. The purpose is to enhance and support the professional development of prospective and current teachers in Iowa. Indicators of grant success for partner high-need local education agencies and institutions of higher education will be 1) a higher percentage of teacher education program completers recommended for licensure who demonstrate competence for teaching in high-need districts in multiple ways including improved scores leading to teacher licensure, 2) increased retention of prospective, beginning and experienced teachers, 3) a greater number of prospective, beginning and experienced teachers with electronic portfolios/integrated technology platforms evaluated through a consistent set of matrices and 4) enhanced professional development for pre-service faculty and evaluators and mentors of practicing teachers all with the result of measurably improved student learning and achievement.

GOAL #1—Emerging attributes of effective teaching will be examined, identified and defined in preparation for integration into a partner Institution of Higher Education pre-service program and into partner Local Education Agency professional development.

Objective #1: A review of research will result in a comprehensive study that identifies current and emerging attributes of teacher effectiveness.

Activities	Benchmarks	Timelines	Responsible Parties
Research team selected and recommended by advisory group to facilitate study	Agreement reached with research team	By end of month two	Project Director and IHE partner
Study facilitated and presented to advisory group	Research study accepted	By end of month five	Research team and Project Director

Advisory group accepts and communicates finds to all grant partners	Grant partners receive findings	By end of month six	Project Director
Outcome: All grant partners will have the benefit of study findings to develop pilot program			
Measurement: Grant partners confirm that they have received and considered research			

Objective #2: A collaborative team, which includes the partner institution of higher learning, partner local educational agencies and the Iowa Department of Education, will utilize findings to develop an enhanced and reformed definition of effective teaching.

Activities	**Benchmarks**	**Timelines**	**Responsible Parties**
Collaborative team members identified and meetings scheduled	Team member list and schedule	End of month seven	Project Director
Collaborative team members meet and develop definition of effective teaching	Definition developed	End of month eight	Project Director and Advisory Group
Definition communicated to grant partners	Document received by partners	End of month eight	Project Director
Grant partners received definition and confirm agreement	Grant partners communicate agreement	End of month eight	Project Director and partners
Outcome: Agreed upon definition of effective teaching accepted and agreed upon by grant partners			
Measurement: Grant partners confirm agreement of definition of effective teaching			

Objective #3: Develop scaling of digital artifacts aligned to the Interstate New Teacher Assessment Support Consortium (INTASC) and Iowa Teaching Standards (ITS).

Activities	**Benchmarks**	**Timelines**	**Responsible Parties**
Assessment consultant identified and selected	Consultant agreement secured	End of month two	Project Director, IHE and Advisory Group
An assessment team from grant partners formed	Team members listed and meeting scheduled	End of month two	Project Director, IHE and Advisory Group

A measurement system will be created by assessment team working with consultant and communicated to partners	Report created detailing measurement system presented to grant partners	End of month ten	Assessment Team
Outcome: Measurement system for scaling digital artifacts accepted and agreed upon by grant partners will be created			
Measurement: Grant partners provide documentation that system has been completed			

GOAL #2—Pre-service faculty will integrate the attributes of effective teaching into pre-service program, which will be documented in prospective teacher-created integrated technology platform.

Objective #1: A collaborative team, which includes the partner institution of higher learning, partner local educational agencies and the Iowa Department of Education, will utilize the attributes outlined in the study to develop and pilot a pre-service program.

Activities	Benchmarks	Timelines	Responsible Parties
Pilot team to develop pilot project formed	Team created and first meeting scheduled	By end of month two	IHE and Project Director
Pilot team creates pilot project for review by grant partners	Pilot model presented to grant partners	End of month 12	Pilot Team and Project Director
Pilot project finalized with feedback from all grant partners	Final pilot document shared with grant partners	End of month 14	Pilot Team and Project Director
Pilot project implementation plan developed by pilot team	Plan submitted to Project Director	End of month 15	Project Director and pilot implementing team
Pilot project implemented and assessed	Implementing partners submit results	Fall of 2012 through spring 2013	IHE partner, Project Director and pilot team
Outcome: Results from pilot project provide grant team with assessment of pre-service program enabling adjustments prior to full scale implementation			
Measurement: A summary result will be reviewed by grant partners and assessed regarding validity for full scale implementation			

Objective #2: A collaborative team, which includes the partner institution of higher learning, partner local educational agencies and the Iowa Department of Education, will utilize the results

of the pilot experience to revise and implement a pre-service program to be utilized by the partner institution of higher learning.

Activities	Benchmarks	Timelines	Responsible Parties
IHE will use pilot results to develop reformed and enhanced pre-service program	Creation of program	Summer of 2012	IHE partner institution
IHE will develop a phased implementation schedule for the program	Schedule created and published	Final year of program	IHE partner institution
Outcome: IHE will have developed and implemented a new pre-service program			
Measurement: Implementation to be evaluated			

Objective #3: Prospective teachers enrolled in the partner Institution of Higher Education will implement pedagogy reflecting emerging attributes of effective teaching and document through the creation of artifacts which are placed into integrated technology platforms.

Activities	Benchmarks	Timelines	Responsible Parties
IHE partner will incorporate attributes and artifact collection system into pre-service programs	IHE curricula document attributes and collection system	Beginning academic year of 2012/2013	IHE faculty
Prospective teachers will implement attributes during field experiences	Prospective teachers document implementation	Beginning academic year of 2012/2013	IHE faculty and prospective teachers
Prospective teachers will identify artifacts and place into integrated technology platform	Prospective teachers document implementation	Beginning academic year of 2012/2013	IHE faculty and prospective teachers
Outcome: All prospective teachers completing field experiences will demonstrate enhanced teacher effectiveness compared with previous pre-service teachers			
Measurement: Evaluation of pre-service teachers who complete field experiences			

Objective #4: Educational administration faculty will incorporate digital artifacts to reform and enhance the PK-12 administrator preparation program to provide support and retain effective beginning and practicing teachers.

Activities	Benchmarks	Timelines	Responsible Parties
IHE partner will incorporate attributes and artifact collection system into administrator preparation program	IHE curricula document attributes and collection system	Beginning academic year of 2012/2013	IHE faculty
Prospective administrators will use scaling of digital artifacts to support beginning and practicing teachers	Prospective administrators document implementation	Beginning academic year of 2012/2013	IHE faculty and prospective administrators
Outcome: Prospective administrators completing internships will demonstrate enhanced effectiveness compared with previous prospective administrators			
Measurement: Evaluation of administrators who complete internships			

GOAL #3—Partner Local Education Agencies will integrate the attributes of effective teaching into professional development, which will be documented in teacher-created integrated technology platforms.

Objective #1: A collaborative team, which includes the partner institution of higher learning, partner local educational agencies and the Iowa Department of Education, will utilize the attributes outlined in the study to pilot reformed and enhanced professional development.

Activities	Benchmarks	Timelines	Responsible Parties
Pilot team to develop pilot project formed	Team created and first meeting scheduled	By end of month two	IHE and Project Director
Pilot team creates pilot project model for review by grant partners	Pilot model presented to grant partners	By end of month 12	Pilot Team, IHE and Project Director

Pilot project finalized with feedback from all grant partners	Final pilot document shared with grant partners	By end of month 14	Pilot Team, IHE and Project Director
Pilot project implementation plan developed by pilot team	Plan submitted to project director	By end of month 15	IHE, Project Director and pilot implementing team
Pilot project implemented and assessed	Implementing partners submit results	Fall of 2011 through spring 2012	IHE, Project Director and pilot team
Outcome: Results from pilot project provide grant team with assessment of professional development enabling adjustments prior to full scale implementation			
Measurement: A summary result will be reviewed by grant partners and assessed regarding validity for full scale implementation			

Objective #2: A collaborative team, which includes the partner institution of higher learning, partner local educational agencies and the Iowa Department of Education, will utilize the results of the pilot experience to reform and improve practices for effective teaching professional development to be utilized by partner local education agencies.

Activities:	**Benchmarks**	**Timelines**	**Responsible Parties**
Pilot team to develop pilot project formed	Team created and first meeting scheduled	By end of month two	IHE and Project Director
Pilot team creates pilot project model for review by grant partners	Pilot model presented to grant partners	By end of month 12	Pilot Team, IHE and Project Director
Pilot project finalized with feedback from all grant partners	Final pilot document shared with grant partners	By end of month 14	Pilot team, IHE and Project Director
Pilot project implementation plan developed by pilot team	Plan submitted to project director	By end of month 15	IHE, Project Director and pilot implementing team
Pilot project implemented and assessed	Implementing partners submit results	Fall of 2011 through spring 2012	IHE, Project Director and pilot team
Outcome: Results from pilot project provide grant team with assessment of professional development enabling adjustments prior to full scale implementation			
Measurement: A summary result will be reviewed by grant partners and assessed regarding validity for full scale implementation			

Objective #3: Practicing teachers in partner Local Education Agencies will implement pedagogy reflecting emerging attributes of effective teaching and document through the creation of artifacts which will be placed into integrated technology platform.

Activities	**Benchmarks**	**Timelines**	**Responsible Parties**
LEA partners will incorporate attributes of effective teaching into pedagogy	LEA teachers document implementation	Beginning school year of 2012/2013	LEA faculty and IHE
LEA teachers will identify and/or create effective teaching artifacts and place into integrated technology platform that includes access through public television partnership	LEA teachers document implementation	Beginning school year of 2012/2013	LEA faculty, Iowa Department of Education, Iowa Public Television and IHE
Outcome: Student achievement will be measurably increased			
Measurement: Evaluation of student achievement including, but not limited to, student work samples and test scores			

Objective #4: Evaluator trainers will incorporate digital artifacts to reform and enhance evaluator training of PK-12 administrators to support and retain beginning and practicing teachers.

Activities	**Benchmarks**	**Timelines**	**Responsible Parties**
Evaluator trainers will incorporate attributes of effective teaching, artifact collection and artifact scaling into evaluator training	Evaluator training materials will indicate new evaluation process	Beginning academic year of 2012/2013	Evaluator trainers
Evaluators will use electronic artifact scaling to support teacher effectiveness	Evaluators report compliance	Beginning academic year of 2012/2013	LEA administrators
Outcome: Evaluators demonstrate effective use of digital artifact scaling in beginning and practicing teacher support			
Measurement: Survey report indicating compliance			

Objective #5: The Department of Education will develop an in-house integrated technology platform and system of storage, maintenance and retrieval to support pre-service and practicing teachers long term.

Activities	Benchmarks	Timelines	Responsible Parties
Team is assembled to investigate, plan, create and implement state platform	Team members meet	Month ten of project	Project Director
Team works with partner's platform, the DOE, and IHE to develop state of Iowa platform	Platform developed	By end of year two	Team, Project Director and IHE
Transition of data to new platform	Platform in use	Beginning of year three	Team, Project Director and IHE
Outcome: Iowa Integrated Technology Platform in use			
Measurement: Evaluation of utilization			

Indentifying Partner LEAs

As noted in the above work plan summary, a partnership with high-need schools will be developed. The criteria for selection follows the directives listed in the grant application under "eligibility." All districts indentified are included on the Small Rural School Achievement Program (SRSA) list. Additionally, the districts identified meet the criteria of teacher turnover rate of 16 percent or higher. Once a district has been identified, the individual schools selected will meet the criteria of residing in the highest quartile for percentage of students eligible for free and reduced lunch within the district. Attached as a separate file in this application package is the documentation relative to how partner LEAs will be identified.

Narrative of Program Requirements: Refer to Optional Checklist, Appendix B

The Iowa Teacher Quality Partnership Grant is designed to meet the goals of ***Absolute Priority 1***, ***Competitive Preference Priority 1*** and ***Competitive Preference Priority 4***. The

following narrative is organized to provide reviewers with more specific information beyond that detailed in the above work plan. The format aligns the information relative to the selected priorities with **Optional Checklist, Appendix B** which is included as part of this application package. Please note that aspects of the checklist that are not applicable to the priority elements selected are marked "NA" in the checklist.

General Application Requirements Checklist Narrative

In the following section of narrative, the grant team provides narrative addressing the General application requirements listed in the Optional Checklist. The application includes a completed optional checklist located in Appendix B. Please note that this section was organized to match the order provided in the optional checklist.

1. An application reflecting the eligibility of the partnership is effectively submitted by the result of this application. Also included is documentation detailing the partnership and the eligibility of each member.
    a. A **three part needs assessments** has been provided in **Appendix D** that addresses the requirements with respect to preparation, ongoing training, professional development and retention of general education and special education teachers and principals. Included are a summary of an alumni survey from UNI, the IDE new teacher retention data and the Iowa survey conducted by the New Teacher Center at UCSC survey report on prospective and beginning teachers.
    b. The purpose of the grant is to provide prospective and beginning teachers with pre-service training and professional development based on research supported attributes of effective teaching. Furthermore, evidence of strong teaching skills will be

documented through the collection of artifacts, which is an essential element of the integrated technology platform.

c. The understanding and use of research and data to modify and improve classroom instruction is embedded within teacher work sample, which is already in use by the IHE partner, and within the artifact collection and scaling through the integrated technology platform to be developed through this grant project.

d. (i) The eligible partnership is aware of and committed to the provisions provided under the Elementary and Secondary Education Act, the Individuals with Disabilities Education Act, and the National Science Foundation. (ii) Activities of this partnership will be consistent with state, local and other education reform activities in that this work will connect the IHE partner and pre-service teachers to the work practicing teachers and administrators in the state of Iowa are currently engaged in within the Iowa Core Curriculum.

e. The funding strategy presented in the budget and budget narrative for this project reflects how funds are integrated from other related sources. The strategy includes notation of (i) state match in years three through five, (ii) the intended use of funds such as developing a definition of effective teaching with subsequent pre-service programming and professional development and integration and eventual development of technology platforms to document artifacts of effective teaching and (iii) the commitment of the resources of the partnership to other activities assisted including financial support, faculty participation and time commitments. The continuation plan for this document rests primarily with the transition to an in-house integrated technology platform beginning in year three. Additionally, the IHE partner

will have adopted new and reformed methods of teaching pedagogy for pre-service programs that will offer improved outcomes following the conclusion of the grant period. The IHE will have developed new relationship with LEAs which will be ongoing after the end of the grant period. Administrators and mentors will benefit following the conclusion of the grant in their work with beginning teachers because they will have developed tools that will become a permanent part of their practice. In addition, it is expected that other institutions of higher education will join this effort. Therefore, the positive impact of this grant project will continue for years after the conclusion of year five.

f. (i, ii) In addition to the description of how this grant supports pre-service and beginning teachers, the project's overarching goal is to improve student academic achievement by providing more effective teachers in high-need schools. As described in the project work plan, pre-service and beginning teachers will receive support and professional development aligned to the attributes of effective teaching indentified through research. (iii) It is the intention of this grant that all teachers working with all students will be engaged with appropriate pre-service training and ongoing professional development with the goal of improving student academic achievement. Through ongoing professional development for administrators and mentors, the project will also focus on retention of general education teachers, special education teachers, talented and gifted teachers and English-language learner teachers. (iv) The evaluation plan which supports this section of the grant is included in the Accountability and Evaluation section of this document. (v I) NA, (vII) the University of Northern Iowa's method-based teacher education course require the

embedding of Iowa's academic standards within coursework. This would include the use of these standards as the students develop units and/or lessons that are taught during clinical experiences. Thus, these standards provide the pre-service students' frame work for instructional design and implementation. This issue is also addressed in the state of Iowa's Standards for Practitioner Preparation Programs: Instructional Planning. The candidate plans instruction based upon knowledge of subject matter, students, the community, curriculum goals and state curriculum models. (vi) University of Northern Iowa pre-service teachers will receive intensive instruction in meeting the needs of students with disabilities and serving as a member of the IEP team. A three-pronged approach will be used to address this need: (1) coursework specific to meeting the needs of students with disabilities, taught by faculty from the Department of Special Education, (2) infusion of special education content, including principles of universal design for learning, into education coursework, through collaboration between faculty from Special Education, faculty from the other departments, and teachers in the high-needs schools and (3) clinical experiences in classrooms serving children with disabilities in inclusive settings and, where appropriate, self-contained special education classrooms. (vii) Specific instruction on meeting the needs of English-language learners will be included in coursework. Professional development workshops will be offered for practicing teachers and clinical experiences with English-language learners in high-needs schools will occur. (viii, viii I, viii II) Collaborative teams, or Communities of Practice (CoPs) will work together to strengthen and reform teacher preparation and K-12 rural education, drawing on the expertise of both faculties. Teams will include content area specialists

from UNI's Colleges of Education, Humanities and Fine Arts, Natural Sciences, Social and Behavioral Sciences, as well as specialists in literacy, special education, learning theory, child and adolescent development, curriculum and instruction, and pedagogy from the College of Education and highly qualified practicing teachers (both beginning teachers and more experienced teachers) in the high-need schools.

The work of the CoPs, organized around endorsement areas (for example, Elementary Education, Secondary Mathematics, Secondary Social Studies, etc.) will focus on strengthening the pre-service teacher preparation programs through developing shared operational definitions of what effective teaching looks like in each subject area and/or grade band. Feedback loops will insure that the work of the CoPs will inform K-12 instructional practice and coursework for pre-service teachers at the university, promoting consistency between the content of coursework and clinical experiences in the rural high-needs schools.

Activities of the CoPs will include the following:

1. Participation in shared professional development efforts, building upon the Iowa Department of Education's Teacher Development Academies and other state professional initiatives such as *Adolescent Literacy* (focused on literacy instruction for adolescents), *Authentic Intellectual Work* (focused on cognitive complexity and teaching for understanding), *Concept-Oriented Reading Instruction* (focused on upper elementary and middle school literacy), *Every Child Reads* (focused on the five components of reading, reading strategies, using data to drive instructional decisions, and the use of classroom-based

assessments for frequent, ongoing monitoring of student progress), *Our Kids* (professional development for teachers of English-language learners); *Question Answer Relationships* (focused on middle and high school reading comprehension), *Second Chance Reading* (focused on helping struggling readers at the middle and high school levels), *Every Student Counts* (focused on teaching mathematics for understanding), *Cognitively Guided Instruction* (focused on the use of authentic formative assessment to plan instructional activities), and *Every Learner Inquires* (focused on inquiry-based science education K-12);

2. Summits on topics of need as identified by the CoPs and the PAIT (anticipated topics include meeting the needs of English-language learners, using principles of universal design for learning, differentiating instruction for students with diverse learning needs and using positive behavioral interventions, etc.);
3. Electronic communication using video conferencing, video streaming, blogs and other web-based systems to provide year-long opportunities for enrichment by extending university students' clinical experiences into geographically distant classrooms and
4. Use of the PAIT (described above) to document and assess teacher effectiveness, direct professional development efforts, and support supervision of pre-service teachers and mentoring of beginning teachers.

After the research study identifies the attributes of effective teaching, it will be the responsibility of the Department of Education in partnership with the IHE to align those attributes with the Iowa Core Curriculum and design professional development for teachers, mentors and administrators in elementary and secondary schools to develop attributes of effective teaching, to deepen content knowledge and implement literacy programs that incorporate essential components of reading instruction. (ix) All pre-service teachers at the University of Northern Iowa participate in at least 25 hours of clinical experience in the semester prior to student teaching (the methods semester). Most programs include many more than 25 hours (range 25-100 hours of pre-student teaching field experience). For the purpose of this proposed project, this year-long clinical experience will occur in the high-needs schools and will be augmented with other forms of communication between pre-service teachers, university faculty, and teachers in the high-needs schools. (x) See section viii. (xi) A system that collects this data is already in place. The IDE collects retention data annually. To further draw benefit from the data, the mission of this project provides for outcomes that will be reflected and analyzed using the retention data collected from the partner LEAs to evaluate the effectiveness of the program.

g. (i, ii) The state of Iowa has an induction program in place that includes mentoring by more experienced teachers. UNI will participate in this program through working directly with the beginning teachers and their mentors in the high-needs schools. Central to this work is the use of the integrated technology platform and the Performance Assessment for Iowa Teachers (PAIT) (described in greater detail below). The PAIT will provide a common system for collecting a wide array of

artifacts that demonstrate teacher effectiveness and that will be consistent from teacher preparation programs to the induction process for beginning teachers. Pre-service teachers who use the PAIT in their coursework and clinical experiences will continue to use it in the induction process. The PAIT serves as both a formative and a summative assessment of teacher effectiveness and provides detailed information that can be used to plan and design professional development experiences. UNI faculty will collaborate with the LEAs to provide professional development in areas of need as identified through the use of the PAIT. Components of the PAIT assess content expertise, teaching expertise, differentiation of instruction for diverse learners, ability to implement and appropriately use the results of assessments to adapt teaching, and meeting the needs of English-language learners. Mentor teachers will be adequately compensated through stipends and course credit for working with UNI faculty. (iii) In addition to the state mentoring program, the University of Northern Iowa will build upon its partnership with the National Commission on Teaching and America's Future (NCTAF), a nonpartisan, nonprofit, advocacy group dedicated to improving teacher quality and leading education company Pearson which is based on NCTAF's *Teachers Learning in Networked Communities* (TLINC) project funded in part by the *Fund for Improvement of Postsecondary Education* (FIPSE) . This partnership offers an online learning community designed to support teacher candidates and novice teachers with a broad network of mentors and experienced talent and to connect UNI educator preparation faculty with their K-12 district partners. (iv) UNI faculty will be provided release time to work with beginning and mentor teachers in the high-needs schools. If needed, they will be provided summer stipends to design and implement

professional development. They will also be provided with instructional designers to assist them with designing professional development experiences that integrate technology appropriately and meet the needs of distance learners. Additionally, they will be able to maintain the use of PAIT as a basis for continuing the examination of the new teacher's teaching effectiveness with the mentoring team of appropriate university faculty and district mentors.

Accountability and Evaluation

The University of Iowa Center for Evaluation and Assessment (CEA) will support the evaluation of the Iowa DE TQ partnership. Evaluation activities will occur for each of the project goals as well as for the initiative as a whole. Since 1992, the CEA has successfully completed more than 100 evaluations of educational and social programs and curriculum development and technology infusion projects, including projects funded by various private and non-profit foundations and NIH, NSF, FIPSE, HRSA, HHS, the Department of Education and state and local agencies. Completed evaluations include the Consortium for Minorities in Teaching Careers (CMTC) in the mid-1990s (Yarbrough, 1997) and the English-language learner component of the recently completed Teacher Quality Enhancement project awarded to the state of Iowa.

The evaluation will follow current best practice guidelines and conform to the *Program Evaluation Standards, 3rd Edition* (Yarbrough, Shulha, Hopson, & Caruthers, in press; Joint Committee, 1994), the American Evaluation Association Guiding Principles (AEA, 2005). The evaluation will serve multiple purposes, including:

- ***Accountability***, to determine if resources are used as proposed and if the activities and processes take place as proposed.

- ***Formative evaluation***, for project improvement to determine if resources are used as efficiently and effectively as possible, if collaborations among the partners and other activities take place effectively and efficiently, and whether barriers or impediments can be removed or reduced.
- ***Summative evaluation***, for the generation of new general and specific knowledge for dissemination about the recruitment and preparation of highly-qualified teachers and administrators, and the outcomes and impacts of highly-qualified teachers on student achievement.

Accountability and Evaluation

1. (A) The evaluation will investigate ***the achievement for all prospective and beginning teachers***, as measured by the eligible partnership with the University of Northern Iowa (UNI) through multiple, comprehensive activities. First, a *process evaluation* will be implemented to document the changes made to the teacher preparation program as a result of the Teacher Quality Partnership. Included in the process evaluation will be an investigation of how collaboration occurs between partners (Iowa DE, UNI, and LEAs) and within partner institutions. In addition, evaluation staff will work with project leaders and collaborators to evaluate the implementation of electronic portfolios, and the effects on intermediate outcomes such as the ability of participants to find employment.

   Second, an *outcomes evaluation* will be implemented to investigate changes in achievement for new and prospective teachers. During the first year of the project, the evaluation team will identify and select initial evaluation questions and the methods with which to investigate them in collaboration with project staff and representatives

from partner institutions. The evaluation team will work with stakeholders and project leaders to determine the strengths and weaknesses of various types of evidence. Then useful and accurate evidence will be collected based on current best standards of evaluation practice (Donaldson, Christie, & Mark, 2009; Frechtling, 2002; Mark, Henry, & Julnes, 2000; Stevens, Lawrenz, & Sharp, 1993; Worthen, & Sanders, 1997). Key clusters of questions will address the effectiveness of identification strategies, success identifying members of underrepresented groups, and how the identification and implementation processes can be augmented and improved.

During Year 1, evaluation staff will work with project staff and stakeholders to create logic models to address each of the major objectives of the TQP (Wyatt-Knowlton & Phillips, 2008). These models will also be informed by program theories. Program evaluation science (Chen, 2005; Chen & Rossi, 1983, 1990; Donaldson, 2007) has increasingly focused on the role of theory in guiding program implementation and the extent to which proposed and implemented programs are grounded in sound theoretical bases from multiple research paradigms and disciplines. In keeping with these new understandings, the evaluation of the TQP will focus on the explicit and implicit program theories that guides selection, programming and research facilitation, including the theories that help identify the talent to be developed (diagnostic theories), the programming to be developed (intervention theories) and the theories that guide program management and service delivery (process theories).

In addition to output tracking (described in section D), the CEA will identify outcomes for students, teachers, teacher candidates, and administrators. A pre-post survey instrument will be used to measure changes in prospective and beginning teachers' self-efficacy, interest in teaching, attitudes toward teaching, and views on the status of teaching. Results of a factor analysis of the survey instrument, using data from a national teacher recruitment program, led to these four areas (Yarbrough, 1997).

Teacher and student artifacts will be evaluated as instructional or curricular products. This will allow for a more nuanced investigation into the instructional abilities of the teachers, and will allow for some evidence of student processes and learning. The evaluation team will work with project staff, AEAs, and LEAs to finalize evaluation questions and the processes (e.g., rubrics or matrices). The process used to evaluate these artifacts will be reviewed with project staff and stakeholders annually.

(B). ***Teacher retention*** will be evaluated by examining both outputs (changes in retention rates) and outcomes (reasons for any changes in teacher retention rates). The evaluation team will work with project staff, the partner IHE, and identified LEAs to identify current teacher retention rates and processes for establishing a system to evaluate retention rates on an annual basis. Participants will be asked to complete a one-page "Participant Tracking" form to facilitate the evaluation of longer-term outputs, outcomes, and impacts. The tracking form will include information such as current contact phone number(s) and address, alternative (or

permanent) contact information, and the names and contact information for three friends or relatives who would be likely to know how to contact the participant.

At the end of the Teacher Quality Partnership funding, these annual rates will be used to produce summative information on changes in retention rates in the first three years of a teacher's career.

(C). Improvement in the pass rates and scaled scores for initial State certification or licensure of teachers. CEA staff will work with the Educational Placement Office at the UNI to investigate any changes in pass rates on the Praxis I and admissions standards into the teacher education program. In addition, information on teacher licensure rates will be tracked and documented throughout the project, and changes in these rates will be further investigated.

(D). *Methods that address the evaluation requirements of section 204(a) of the HEA*

Multiple methods will be implemented to track the project outputs required by section 204(a) of the HEA, including the participant tracking form. Evaluation staff will also work with staff at the partner institution and at the Area Education Associations to identify additional processes to track project participants, including the use of campus or school groups, or social networking sites.

The tracking form will allow the evaluation team to track the following outputs:

i. the percentage of highly-qualified teachers hired by the high-need local educational agency participating in the eligible partnership

ii. the percentage of highly qualified teachers hired by the high-need local educational agency who are members of underrepresented groups.

iii. The percentage of highly qualified teachers hired by the high-need local educational agency who teach high-need academic subject areas (such as reading, mathematics, science, and foreign language, including less commonly taught languages and critical foreign languages)

iv. The percentage of highly qualified teachers hired by the high-need local educational agency who teach in high-need area (including special education, language instruction educational programs for limited English proficient students, and early childhood education)

v. The percentage of highly qualified teachers hired by the high-need local educational agency who teach in high-need schools, disaggregated by the elementary school and secondary school levels

The evaluation team will collaborate with the AEA, partner IHE, and LEAs to track outputs and document outcomes for the percentage of teachers trained to integrate technology into instruction, including the extent that technology infusion is consistent with universal design for learning. Evaluation instruments will be created to examine the effects of this technology infusion, including barriers to success, teacher attitudes, and effects on students.

Participating high quality teachers who use technology to collect, manage, and analyze data will be compared with teachers at similar schools who do not use technology in this manner. Differences in the outcomes for students of project and control teachers may include engagement, attitude, and achievement.

Reporting

Formative evaluation results will be reported in a timely manner to the staff at The University of Iowa, William Penn University, identified LEAs, and other stakeholders. The evaluation team will engage in rapid response reporting of any challenges or key problems for immediate improvement. In addition, annual reports will be constructed for accountability purposes, along with the GPRA reports. These annual reports will also focus on reporting more summative and generalizable information about identification, recruitment, and training of highly-qualified teachers and administrators. Finally, conference presentations and publications grounded in program theories will disseminate results to a wider audience.

Metaevaluation and establishment of a continuous feedback loop

An internal metaevaluation will be conducted. Metaevaluation is a specific type of evaluation, with a focus on accountability and quality assurance of another evaluation. The Program Evaluation Standards (3rd edition, forthcoming) propose that evaluations be held accountable for their utility, propriety, feasibility and accuracy. One aspect of the metaevaluation might examine the utility of evaluation results for various groups of stakeholders, such as project staff, participating teachers and administrators, or IHE partners.

In addition to annual reports, the evaluation team will work with project staff to establish routine meetings to share and discuss formative evaluation results. Processes will be developed to disseminate evaluation results to project stakeholders in a manner that is responsive to their needs. These processes will be reviewed annually for effectiveness and efficiency.

Evaluator Qualifications

The CEA Director, Dr. Yarbrough, has published widely using a variety of mixed methods, including experimental and naturalistic designs as well as quantitative and qualitative information types. He is currently a member and Chair of the Joint Committee on Standards for

Educational Evaluation (JCSEE) and also chairs the task force completing the third edition of the *Program Evaluation Standards* (in press). The CEA Associate Director, Dr. Melissa Chapman, will lead the evaluation of the TQ(3) program with the support of CEA staff. Dr. Chapman provided leadership and evaluation expertise for a state-wide Teacher Quality Enhancement project, and has led a number of other evaluations of projects that involved teacher professional development, English-language learners, analysis of a large statewide dataset, evaluation of program outputs and impacts, and the recruitment and improvement of teachers in STEM areas.

Pre-Baccalaureate Experience: Implementing Reforms within Each Teacher Education Program

(1) Implement Reforms Within each Teacher Preparation Program

1 (A I, II and B i, ii)The proposed project consists of significant reforms to the teacher preparation programs at the University of Northern Iowa (UNI), the largest teacher preparation institution in the state of Iowa. This project will involve university faculty, teacher education students, and beginning and practicing teachers (those who teach multiple subjects, special educators, and teachers of students who are English-language learners) in a seamless program of coursework, clinical experiences, and professional development. (B, ii) The goals of these reform efforts are to improve the selection and preparation of teacher candidates and to increase the effectiveness of beginning and practicing teachers in Iowa, so that all teachers in high-needs LEAs are highly qualified; well-versed in the application of empirically-based practices and scientifically valid research on teaching and learning, principles of universal design for learning, and positive behavioral interventions; and skilled in the effective use of technology to support student learning.

(B ii, II, and IV) Central to the proposed reforms are four components: (1) an integrated technology platform that will support the use of a performance-based system for assessing pre-service teacher quality, (2) intensive collaboration among practicing teachers in high-needs rural LEAs and faculty from across four colleges of Arts and Sciences at the university (Education, Natural Sciences, Social and Behavioral Sciences, and Humanities and Fine Arts) to strengthen content knowledge, pedagogy, student learning methods, and effective teaching strategies for all teachers in rural areas, (3) embedded clinical experiences in high-needs rural schools and (4) use of authentic settings by pre-service teachers for the analysis of student academic achievement data and its impact on improving and differentiating classroom instruction for all students including students with individualized education programs. These are described below. (B IV, bb) and (B IV, aa)

Integrated Technology Platform

(B VI, iii through vi) The use of the integrated technology platform (ITP) to enhance and assess teacher effectiveness is the centerpiece of the proposed project. The project capitalizes on the development and validation of the Performance Assessment for California Teachers (PACT), a performance-based system for assessing pre-service teacher quality designed and piloted by 16 California universities (Pecheone & Chung, 2006). The PACT draws from the INTASC (Interstate New Teacher Assessment and Support Consortium) Standards and the National Board for Professional Teaching Standards, adjusted to take account of teaching issues (such as the teaching of English-language learners) that are important in California. It includes a structured performance assessment and a regimen for scoring that has been honed over several years of research.

The PACT consists of a common assessment, called the Teaching Event (TE), and draws from artifacts created while teaching, accompanied by teacher commentaries that provide context and rationales needed to understand and interpret the artifacts. The PACT uses multiple sources of data (teacher plans, teacher artifacts, student work samples, video clips of teaching, and personal reflections and commentaries) that are organized into four categories of teaching: planning, instruction, assessment, and reflection. The assessment places student learning at the center with special attention to subject-specific pedagogy and the teaching of English-language learners. The PACT thus provides a rich and detailed picture of the teacher's knowledge, skills, and dispositions, and has the potential to inform individual teachers about their performance and drive individual professional development efforts. Specifically, the PACT documents how well the teacher or teacher candidate can:

- plan lessons with consideration for English-language learners and other students with learning challenges,
- teach the lessons to the K-12 students in public school classrooms,
- plan and give student assessments or tests based on the lessons,
- reflect on their own instruction, and
- examine student work and assessment results as evidence of the effectiveness of their instruction.

Reliability and validity of the PACT has been established by Dr. Pecheone and his team at Stanford University over several years of work with 16 teacher preparation programs across California (Pecheone & Chung, 2006). In the proposed project, a partnership with Dr. Pecheone will make it possible for the project team to customize the

PACT to address Iowa teaching standards and state licensure requirements and to establish reliability and validity of the assessment for use with pre-service and beginning teachers. The UNI faculty's considerable contributions to the development and validation of the Teacher Work Sample currently in use in Iowa uniquely qualifies UNI to work with the Stanford team on the customization of the PACT for Iowa.

In their work with teacher preparation programs in California, Dr. Pecheone and his team have found that implementation of the PACT is a powerful tool for identifying strengths and weaknesses of teacher preparation programs and serves as a catalyst for program improvement (Pecheone & Chung, 2006). Results include increased dialogue among program faculty about what constitutes effective teaching; articulation across courses, structures and roles; changes in content of some courses, and structural changes in teacher preparation programs.

The proposed project will build a system for collecting and documenting teacher effectiveness that will be consistent from teacher preparation programs through beginning teacher induction programs. The Iowa version of the PACT, the Performance Assessment of Iowa Teachers (PAIT). Will be used in five ways: (1) in coursework and clinical experiences with pre-service teachers, as a formative assessment, (2) with student teachers, as a summative assessment of their teacher preparation, (3) with beginning teachers in their first two years of teaching in the high-needs schools, as part of the induction and mentoring process, (4) with the teachers in the high-needs schools, as a mechanism for supporting supervision of pre-service teachers, mentoring of beginning teachers, and collaboration and communication between university faculty and teachers in the high-needs schools and (5) by university faculty, as a source of feedback

concerning the effectiveness of specific coursework and entire teacher preparation programs, identifying strengths and weaknesses of programs, and informing reform efforts. Analysis of the results of the PAIT with pre-service teachers will assist university faculty in identifying gaps in the teacher preparation programs.

Collaborations

One of the challenges of rural education is professional isolation. Iowa has over 300 small rural school districts, some that consist of only one school serving as few as 250-300 students. In small rural school districts, individual teachers frequently are the only person in the school with a particular area of expertise, so that they cannot identify colleagues with whom to consult and collaborate. Distance between schools can be a substantial barrier to professional collaborations. To combat this isolation, the proposed project will create a mechanism for using technology to bring together collaborative teams of university faculty and faculty from the high-needs schools participating in the project. These collaborative teams, or Communities of Practice (CoPs) will work together to strengthen and reform teacher preparation and K-12 rural education, drawing on the expertise of both faculties. Teams will include content area specialists from UNI's Colleges of Education, Humanities and Fine Arts, Natural Sciences, Social and Behavioral Sciences, as well as specialists in literacy, special education, learning theory, child and adolescent development, curriculum and instruction, and pedagogy from the College of Education, and beginning and experienced teachers in the high-needs schools.

The work of the CoPs, organized around endorsement areas (for example, Elementary Education, Secondary Mathematics, Secondary Social Studies, etc.) will focus on strengthening the pre-service teacher preparation programs through developing

shared operational definitions of what effective teaching looks like in each subject area and/or grade band. Feedback loops will insure that the work of the CoPs will inform K-12 instructional practice and coursework for pre-service teachers at the university, promoting consistency between the content of coursework and clinical experiences in the rural high-needs schools.

Activities of the CoPs will include the following:

- Participation in shared professional development efforts, building upon the Iowa Department of Education's Teacher Development Academies and other state professional initiatives such as *Adolescent Literacy* (focused on literacy instruction for adolescents), *Authentic Intellectual Work* (focused on cognitive complexity and teaching for understanding), *Concept-Oriented Reading Instruction* (focused on upper elementary and middle school literacy), *Every Child Reads* (focused on the five components of reading, reading strategies, using data to drive instructional decisions, and the use of classroom-based assessments for frequent, ongoing monitoring of student progress), *Our Kids* (professional development for teachers of English-language learners), *Question Answer Relationships* (focused on middle and high school reading comprehension), *Second Chance Reading* (focused on helping struggling readers at the middle and high school levels), *Every Student Counts* (focused on teaching mathematics for understanding), *Cognitively Guided Instruction* (focused on the use of authentic formative assessment to plan instructional activities), and *Every Learner Inquires* (focused on inquiry-based science education K-12),

- Summits on topics of need as identified by the CoPs and the PAIT (anticipated topics include meeting the needs of English-language learners, using principles of universal design for learning, differentiating instruction for students with diverse learning needs, using positive behavioral interventions, etc.),
- Electronic communication using video conferencing, video streaming, blogs and other web-based systems to provide year-long opportunities for enrichment by extending university students' clinical experiences into geographically distant classrooms and
- Use of the PAIT (described above) to document and assess teacher effectiveness, direct professional development efforts, and support supervision of pre-service teachers and mentoring of beginning teachers.

(2) Embedded Clinical Experiences

2 (A-H) Pre-service students will participate in clinical experiences in the high-needs schools during their final year in the teacher preparation programs. There are four required clinical experiences at the University of Northern Iowa. The first one is embedded in multiple schools. The second one takes place in Iowa's Research and Development School, UNI's Price Laboratory School. The final two semesters of the university's teacher preparation programs consist of methods classes (Level 3) and student teaching (Level 4), in that order. The methods semester includes a minimum of 25 hours of clinical field experiences (range 25-100 hours clinical experience pre-student teaching), depending on the program.

Field experiences for UNI students have been difficult to embed regularly in small rural schools, due primarily to geographic barriers. For this project, technology will be used to link the teachers in the high-needs schools with students at the university. Poly-coms and video streaming will make it possible for students in university coursework to observe in classrooms, get to know their supervising teachers, and become familiar with their teaching in addition to their face-to-face clinical experiences in the teachers' classrooms, thus providing the pre-service students with a clinical based experience throughout the course of their programs. Instructional designers will assist university faculty in designing coursework that can be completed on-line, increasing the amount of student time available for clinical experiences at Level 3.

The close collaboration between university faculty and teachers in the high-needs schools, fostered by the CoPs and the teachers' experiences using the PAIT in their own classrooms will make it possible for UNI faculty and classroom teachers to work together to integrate pedagogy and classroom practice. That is, students will experience continuity between what they learn about research-based practices and what they observe, implement, and reflect on in real classrooms, using the PAIT as a formative assessment. The use of the PAIT will support pre-service teachers in learning how to choose, implement, and analyze student assessment data and use the results to improve classroom instruction.

The use of the PAIT in the pre-student teaching clinical experiences will make it possible for students to receive specific feedback on their teaching from

UNI faculty and supervising teachers in the high-needs schools. Clinical experiences will focus on learning how to meet the specific learning needs of a diverse range of students including students with disabilities, English-language learners, students who are gifted and talented and students with low literacy levels. Clinical experiences will also provide students with opportunities to learn how to participate effectively as a member of an IEP team and collaborate with other specialists to identify strategies for meeting the needs of students with disabilities. Finally, practicing teachers in the high-needs schools will work with university faculty to insure that all pre-service teachers in the project receive instruction in how to use effective strategies for reading instruction, use appropriate screening tools and assessments to diagnose reading difficulties, individualize literacy instruction for students with deficiencies in literacy skills and integrate literacy skills across subject areas.

Students who participate in the project will complete their Level 4 student teaching in these small rural schools. The PAIT will serve as a summative assessment of pre-service teachers' knowledge, skills, and dispositions during the student teacher experience, insuring that graduates are qualified and ready to enter the field as highly effective teachers. Although the project cannot compel high-needs LEAs to hire these graduates, it is logical to assume that the knowledge and skill demonstrated by these graduates will make them highly sought-after by the rural schools in which they conduct their student teaching.

In addition to being used at the level of the individual teacher, data from the PAITs conducted by student teachers in the high-needs schools will be fed back to the programs in a feedback loop that will drive program reform.

Academic Achievement Data

The formal pre-baccalaureate classroom and clinical setting will provide pre-service teachers opportunities to analyze student academic achievement data and other measures of student learning to improve classroom instruction. The proficient use of well designed assessment tools supports learner-centered teaching as required in the new Iowa Core Curriculum.

UNI and LEA faculty will incorporate sound assessment technologies and strategies that provide continuous feedback on what is being learned, enabling teams of teachers to make necessary revisions that personalize learning resources and activities to individual needs. The use of the PAIT process will serve to immerse pre-service students and faculty participants in an example of comprehensive assessment model. This can assist in understanding the use of data from other scientifically valid and research based assessment tools. Regular discussions within the CoPs groups will establish a learning culture that will link the full learning cycle to ongoing student and program enhancement. These collaborative efforts will support learning and program improvement at both the local and university levels. The process of collaboration between faculty and pre-service student supports and encourages continuous learning, sustained teamwork, and agility in an ever-changing environment.

(3) Induction Program for Beginning Teachers

The project will make it possible for university faculty to participate actively in the induction program for beginning teachers in the high-needs schools. Specific activities in the induction program include the following:

- Mentors will receive professional development on how to use the PAIT as a tool in mentoring beginning teachers.
- Beginning teachers will complete the PAIT three times each year of the induction program.
- Mentors and university faculty will use the results of the PAIT to identify strengths and weaknesses and plan professional development experiences specifically targeted at areas of need.
- Beginning teachers will participate in Communities of Practice (CoPs) (see previous language in narrative) alongside university faculty and mentors.
- Integrate Teacher Work Samples process for measuring professional growth in "Journey to Excellence", an Iowa model for mentoring and induction for beginning teachers

(5) (a.b.c) **Teacher Recruitment**

The grant partnership will develop and implement strategies to recruit and retain highly qualified teachers from wider representative populations, including minorities, those will disabilities and teachers for whom their first language is not English. The IHE partner will implement an alternative licensure program in order to attract professionals from other fields to meet the needs of high-need, rural schools and shortages in specific content areas such as math, science, special education, and instruction for English-language learners.

The Iowa Mentoring and Induction Program and the Journey to Excellence Model Program support the recruitment and retention of beginning teachers by providing funding, public policy and training for PK-12 schools. Beginning teachers in high-need partner schools will be able to teach in an environment that provides guidance from a trained mentor and a supportive organizational structure at building and district levels.

A loan forgiveness program offer by the state of Iowa offers loan cancellation benefits to teachers who teach in shortage areas. The maximum annual award is 20 percent of the teacher's total federal Stafford loan balance, including principal and interest, not to exceed the average resident tuition rate established for students attending universities governed by the Iowa Board of Regents for the first year following the recipient's graduation. For 2008 graduates, the maximum award is $6,420.

(6) Literacy Training

The literacy component of the proposal will be based on research-based professional development models and programs, which the Department of Education and Area Education Agencies provide and continue to enhance for practicing teachers and administrators in Iowa. As listed previously and as described in Appendix D, faculty will be invited to participate in train-the-trainer professional development activities with the intention of integrating these literacy models and programs into the preparation program to strengthen literacy teaching skills of prospective and beginning teachers.

Iowa literacy models and programs incorporate the essential components of reading and writing across subject areas, including the use of screening, diagnostic, formative and summative assessments to improve classroom instruction for all students and provide individualized, intensive, targeted literacy instruction for students with deficiencies in literacy skills.

In Summary

The narrative provided details the background, research and project plan that will enable the Iowa Teacher Quality Partnership Grant to successfully meet the challenge of significantly improving the learning of Iowa's PK-12 students.

APPENDIX E

Appendix E

Attachment Title	Relevant Selection Criterion	Page #
Senate File 2033—Reprinted	(E)(1)	Appendix E, page 1
Defining Persistently Low-Achieving Schools	(E)(2)(i)	Appendix E, page 10
Iowa Support System for Schools and Districts in Need of Assistance (SINA & DINA)	(E)(2)(i)	Appendix E, page 14
Iowa Schools in Need of Assistance: 6-year trend	(E)(2)(i)	Appendix E, page 19
Fact Sheet: School Administrator Manager (SAM) Project	(E)(2)(i)	Appendix E, page 23

Senate File 2033 - Reprinted

SENATE FILE _____
BY COMMITTEE ON EDUCATION

(SUCCESSOR TO SSB 3031)

(As Amended and Passed by the Senate January 13, 2010)

A BILL FOR

1 An Act relating to school improvement and the approval
2 and revocation of charter schools, the establishment of
3 innovation zone schools by consortia of school districts
4 and area education agencies, and the implementation of
5 interventions for persistently lowest=achieving schools.
6 BE IT ENACTED BY THE GENERAL ASSEMBLY OF THE STATE OF IOWA:

TLSB 5609SV (4) 83
kh/rj

PAG LIN

1 1 Section 1. Section 256.9, Code Supplement 2009, is amended
1 2 by adding the following new subsection:
1 3 NEW SUBSECTION. 60. a. Require a school district that has
1 4 one or more attendance centers identified by the department as
1 5 a persistently lowest=achieving school to implement one or more
1 6 of the interventions mandated by the United States department
1 7 of education for a persistently lowest=achieving school
1 8 pursuant to the federal No Child Left Behind Act of 2001, Pub.
1 9 L. No.107=110 { 1003(g), 20 U.S.C. { 6303(g), and any federal
1 10 regulations adopted pursuant to the federal Act.
1 11 b. A school district required to implement one or more
1 12 interventions pursuant to paragraph "a" and the employee
1 13 organization representing the school district's teachers
1 14 shall meet at reasonable times to negotiate a memorandum of
1 15 understanding that contains an agreement on the specific
1 16 intervention to be implemented and a provision stating that
1 17 the terms of any collective bargaining agreement between
1 18 the parties shall remain in effect and unaltered except as
1 19 specifically agreed to in the memorandum of understanding.
1 20 If the parties are unable to reach an agreement on the
1 21 memorandum of understanding within forty=five days of the date
1 22 the school district is notified that it has a persistently
1 23 lowest=achieving school, the school district and the employee
1 24 organization representing the school district's teachers shall,
1 25 within five days, select an impartial and disinterested person
1 26 to serve as a mediator. The mediator shall attempt to bring
1 27 the parties together to effectuate a settlement of the dispute,
1 28 but the mediator shall not compel the parties to agree. If
1 29 mediation fails to result in a mutually agreed to memorandum
1 30 of understanding, not later than thirty days after selecting
1 31 the mediator the school district shall not receive any school
1 32 improvement funds under Tit.I of the federal Elementary and
1 33 Secondary Education Act of 1965 for the attendance center
1 34 identified as a persistently lowest=achieving school. The
1 35 memorandum of understanding remains in effect for the period of
2 1 time that an attendance center is identified as a persistently
2 2 lowest=achieving school unless a duration period is included in

2 3 the memorandum of understanding or the parties mutually agree
2 4 to amend the memorandum of understanding.
2 5 Sec. 2. Section 256F.1, subsection 1, Code 2009, is amended
2 6 to read as follows:
2 7 1. Charter schools and innovation zone schools shall be part
2 8 of the state's program of public education.
2 9 Sec. 3. Section 256F.1, subsection 3, unnumbered paragraph
2 10 1, Code 2009, is amended to read as follows:
2 11 The purpose of a charter school or an innovation zone
2 12 school established pursuant to this chapter shall be to
2 13 accomplish the following:
2 14 Sec. 4. Section 256F.1, subsection 3, Code 2009, is amended
2 15 by adding the following new paragraphs:
2 16 NEW PARAGRAPH. g. Create different organizational
2 17 structures for continuous learner progress.
2 18 NEW PARAGRAPH. h. Allow greater flexibility to meet the
2 19 education needs of a diverse and constantly changing student
2 20 population.
2 21 NEW PARAGRAPH. i. Allow for the allocation of resources in
2 22 innovative ways through implementation of specialized school
2 23 budgets for the benefit of the schools served.
2 24 Sec. 5. Section 256F.1, Code 2009, is amended by adding the
2 25 following new subsection:
2 26 NEW SUBSECTION. 4. An innovation zone school may be
2 27 established pursuant to this chapter to encourage diverse
2 28 approaches to learning and education within individual schools.
2 29 Sec. 6. Section 256F.2, subsection 1, Code 2009, is amended
2 30 to read as follows:
2 31 1. "Advisory council" means a council appointed by the
2 32 school board of directors of a charter school or an innovation
2 33 zone consortium pursuant to section 256F.5, subsection 4.
2 34 Sec. 7. Section 256F.2, Code 2009, is amended by adding the
2 35 following new subsection:
3 1 NEW SUBSECTION. 1A. "Area education agency board" means
3 2 the board of directors of an area education agency established
3 3 pursuant to chapter 273.
3 4 Sec. 8. Section 256F.2, subsection 3, Code 2009, is amended
3 5 to read as follows:
3 6 3. "Charter school" means a ~~state public~~ charter school
3 7 ~~operated as a pilot program~~ established in accordance with this
3 8 chapter.
3 9 Sec. 9. Section 256F.2, subsection 4A, Code 2009, is amended
3 10 by striking the subsection and inserting in lieu thereof the
3 11 following:
3 12 4A. "Innovation zone consortium" means a consortium of two
3 13 or more school districts and an area education agency in which
3 14 one or more of the school districts is located, that receives
3 15 approval to establish an innovation zone school pursuant to
3 16 this chapter. In addition, the innovation zone consortium
3 17 may receive technical assistance from an accredited higher
3 18 education institution.
3 19 4B. "Innovation zone school" means a public school
3 20 administered by a principal that is, pursuant to an innovation
3 21 zone school contract entered into by an innovation zone
3 22 consortium pursuant to section 256F.6, established as an
3 23 innovation zone school.
3 24 Sec. 10. Section 256F.3, Code 2009, is amended to read as
3 25 follows:
3 26 256F.3 ~~Pilot program -- application~~ Application.
3 27 1. The state board of education shall apply for a federal
3 28 grant under Pub.L. No.107=110, cited as the federal No
3 29 Child Left Behind Act of 2001 ~~(Title~~, Tit.V, ~~Part~~ Pt.B,
3 30 ~~Subpart~~ Subpt.1~~)~~, for purposes of providing financial
3 31 assistance for the planning, program design, and initial
3 32 implementation of public charter schools. The department shall

3 33 ~~initiate a pilot program to test~~ monitor the effectiveness of
3 34 charter schools and shall implement the applicable provisions
3 35 of this chapter.
4 1 2. a. To receive approval to establish a charter school
4 2 in accordance with this chapter, the principal, teachers,
4 3 or parents or guardians of students at an existing public
4 4 school shall submit an application to the school board to
4 5 convert an existing attendance center to a charter school.
4 6 An attendance center shall not enter into a charter school
4 7 contract with a school district under this chapter unless the
4 8 attendance center is located within the school district. The
4 9 application shall demonstrate the support of at least fifty
4 10 percent of the teachers employed at the school on the date of
4 11 the submission of the application and fifty percent of the
4 12 parents or guardians voting whose children are enrolled at the
4 13 school, provided that a majority of the parents or guardians
4 14 eligible to vote participate in the ballot process, according
4 15 to procedures established by rules of the state board.
4 16 b. To receive approval to establish an innovation zone
4 17 school in accordance with this chapter, an innovation zone
4 18 consortium shall submit an application to the state board
4 19 which demonstrates the support of at least fifty percent of
4 20 the teachers employed at each proposed innovation zone school
4 21 on the date of the submission of the application and fifty
4 22 percent of the parents or guardians voting whose children are
4 23 enrolled at each proposed innovation zone school, provided
4 24 that a majority of the parents or guardians eligible to vote
4 25 participate in the ballot process, according to procedures
4 26 established by rules of the state board.
4 27 c. A parent or guardian voting in accordance with this
4 28 subsection must be a resident of this state.
4 29 3. A school board shall receive and review all applications
4 30 for converting an existing building or creating a new building
4 31 for a charter school. Applications received on or before
4 32 October 1 of a calendar year shall be considered for charter
4 33 schools to be established at the beginning of the school
4 34 district's next school year or at a time agreed to by the
4 35 applicant and the school board. However, a school board may
5 1 receive and consider applications after October 1 at its
5 2 discretion.
5 3 4. A school board shall by a majority vote approve or
5 4 deny an application relating to a charter school no later
5 5 than sixty calendar days after the application is received.
5 6 An application approved by a school board and subsequently
5 7 approved by the state board pursuant to subsection 6 shall
5 8 constitute, at a minimum, an agreement between the school board
5 9 and the charter school for the operation of the charter school.
5 10 A school board that denies an application for a conversion
5 11 to a charter school shall provide notice of denial to the
5 12 applicant in writing within thirty days after board action.
5 13 The notice shall specify the exact reasons for denial and
5 14 provide documentation supporting those reasons.
5 15 5. An applicant may appeal school board denial of the
5 16 applicant's charter school application to the state board
5 17 in accordance with the procedures set forth in chapter 290.
5 18 The state board shall affirm, modify, or reverse the school
5 19 board's decision on the basis of the information provided in
5 20 the application indicating the ability and willingness of the
5 21 proposed charter school to meet the requirements of section
5 22 256F.1, subsection 3, and section 256F.4.
5 23 6. Upon approval of an application for the proposed
5 24 establishment of a charter school, the school board shall
5 25 submit an application for approval to establish the charter
5 26 school to the state board in accordance with section 256F.5.
5 27 7. ~~The~~ An application submitted to the state board pursuant

5 28 to subsection 2, paragraph "b", or subsection 6 shall set forth
5 29 the manner in which the charter school or innovation zone
5 30 school will provide special instruction, in accordance with
5 31 section 280.4, to students who are limited English proficient.
5 32 The application shall set forth the manner in which the charter
5 33 school or innovation zone school will comply with federal and
5 34 state laws and regulations relating to the federal National
5 35 School Lunch Act and the federal Child Nutrition Act of 1966,
6 1 42 U.S.C. {$N1751?1785, and chapter 283A. The state board shall
6 2 approve only those applications that meet the requirements
6 3 specified in section 256F.1, subsection 3, and sections 256F.4
6 4 and 256F.5. The state board may deny an application if the
6 5 state board deems that approval of the application is not in
6 6 the best interest of the affected students. ~~The state board~~
~~6 7 shall approve not more than twenty charter school applications.~~
~~6 8 The state board shall approve not more than one charter school~~
~~6 9 application per school district. The state board shall adopt~~
~~6 10 rules in accordance with chapter 17A for the implementation of~~
~~6 11 this chapter.~~
6 12 8. The state board shall approve not more than ten
6 13 innovation zone consortium applications.
6 14 ~~7.~~ 9. The state board shall adopt rules in accordance
6 15 with chapter 17A for the implementation of this chapter. If
6 16 federal rules or regulations relating to the distribution
6 17 or utilization of federal funds allocated to the department
6 18 pursuant to this section are adopted that are inconsistent with
6 19 the provisions of this chapter, the state board shall adopt
6 20 rules to comply with the requirements of the federal rules or
6 21 regulations. The state board shall identify inconsistencies
6 22 between federal and state rules and regulations as provided
6 23 in this subsection and shall submit recommendations for
6 24 legislative action to the chairpersons and ranking members of
6 25 the senate and house standing committees on education at the
6 26 next meeting of the general assembly.
6 27 Sec. 11. Section 256F.4, subsection 1, Code 2009, is amended
6 28 to read as follows:
6 29 1. Within fifteen days after approval of a charter school
6 30 or innovation zone school application submitted in accordance
6 31 with section 256F.3, subsection 2, a school board or innovation
6 32 zone consortium shall report to the department the name of the
6 33 charter school applicant if applicable, the proposed charter
6 34 school or innovation zone school location, and ~~its~~ the charter
6 35 school or innovation zone school's projected enrollment.
7 1 Sec. 12. Section 256F.4, subsection 2, unnumbered paragraph
7 2 1, Code 2009, is amended to read as follows:
7 3 Although a charter school or innovation zone school may
7 4 elect to comply with one or more provisions of statute or
7 5 administrative rule, a charter school or innovation zone
7 6 school is exempt from all statutes and rules applicable to a
7 7 school, a school board, or a school district, except that the
7 8 charter school or innovation zone school shall do all of the
7 9 following:
7 10 Sec. 13. Section 256F.4, subsection 2, paragraphs a, g, and
7 11 j, Code 2009, are amended to read as follows:
7 12 a. Meet all applicable federal, state, and local health and
7 13 safety requirements and laws prohibiting discrimination on the
7 14 basis of race, creed, color, sex, sexual orientation, gender
7 15 identity, national origin, religion, ancestry, or disability.
7 16 A charter school or innovation zone school shall be subject to
7 17 any court=ordered desegregation plan in effect for the school
7 18 district at the time the ~~school's~~ charter school or innovation
7 19 zone school application is approved.
7 20 g. Be subject to and comply with chapter 284 relating to
7 21 the student achievement and teacher quality program. A charter
7 22 school or innovation zone school that complies with chapter

7 23 284 shall receive state moneys or be eligible to receive state
7 24 moneys calculated as provided in ~~chapter 284~~ section 257.10,
7 25 subsections 9 and 10, and section 257.37A as if it did not
7 26 operate under a charter school or innovation zone school
7 27 contract.
7 28 j. Meetings and records of the advisory council are subject
7 29 to the provisions of chapters 21 and 22.
7 30 Sec. 14. Section 256F.4, subsections 3 through 8, Code 2009,
7 31 are amended to read as follows:
7 32 3. A charter school or innovation zone school shall not
7 33 discriminate in its student admissions policies or practices
7 34 on the basis of intellectual or athletic ability, measures
7 35 of achievement or aptitude, or status as a person with a
8 1 disability. However, a charter school or innovation zone
8 2 school may limit admission to students who are within a
8 3 particular range of ages or grade levels or on any other
8 4 basis that would be legal if initiated by a school district.
8 5 Enrollment priority shall be given to the siblings of students
8 6 enrolled in a charter school or innovation zone school.
8 7 4. A charter school or innovation zone school shall
8 8 enroll an eligible resident student who submits a timely
8 9 application unless the number of applications exceeds the
8 10 capacity of a program, class, grade level, or building. In
8 11 this case, students must be accepted by lot. A charter school
8 12 or innovation zone school may enroll an eligible nonresident
8 13 student who submits a timely application in accordance with
8 14 the student admission policy established pursuant to section
8 15 256F.5, subsection 1. If the charter school or innovation zone
8 16 school enrolls an eligible nonresident student, the charter
8 17 school or innovation zone school shall notify the school
8 18 district of residence and the sending district not later than
8 19 March 1 of the preceding school year. Transportation for the
8 20 student shall be in accordance with section 282.18, subsection
8 21 10. The sending district shall make payments to the charter
8 22 school or innovation zone consortium in the manner required
8 23 under section 282.18, subsection 7. If the nonresident pupil
8 24 is also an eligible pupil under section 261E.6, the innovation
8 25 zone consortium shall pay the tuition reimbursement amount to
8 26 an eligible postsecondary institution as provided in section
8 27 261E.7.
8 28 5. A charter school or innovation zone school shall provide
8 29 instruction for at least the number of days required by section
8 30 279.10, subsection 1, or shall provide at least the equivalent
8 31 number of total hours.
8 32 6. Notwithstanding subsection 2, a charter school or
8 33 innovation zone school shall meet the requirements of section
8 34 256.7, subsection 21.
8 35 7. a. A charter school shall be considered a part of the
9 1 school district in which it is located for purposes of state
9 2 school foundation aid pursuant to chapter 257.
9 3 b. Students enrolled in an innovation zone school shall
9 4 be counted, for state school foundation aid purposes, in the
9 5 student's district of residence.
9 6 8. A charter school or innovation zone consortium may enter
9 7 into contracts in accordance with chapter 26.
9 8 Sec. 15. Section 256F.5, unnumbered paragraph 1, Code 2009,
9 9 is amended to read as follows:
9 10 An application to the state board for the approval of a
9 11 charter school or innovation zone school shall include~~,~~ but
9 12 shall not be limited to~~,~~ a description of the following:
9 13 Sec. 16. Section 256F.5, subsections 1, 2, 4, 6, 7, 10,
9 14 12, 13, 14, 15, 16, and 17, Code 2009, are amended to read as
9 15 follows:
9 16 1. The method for admission to the charter school or
9 17 innovation zone school.

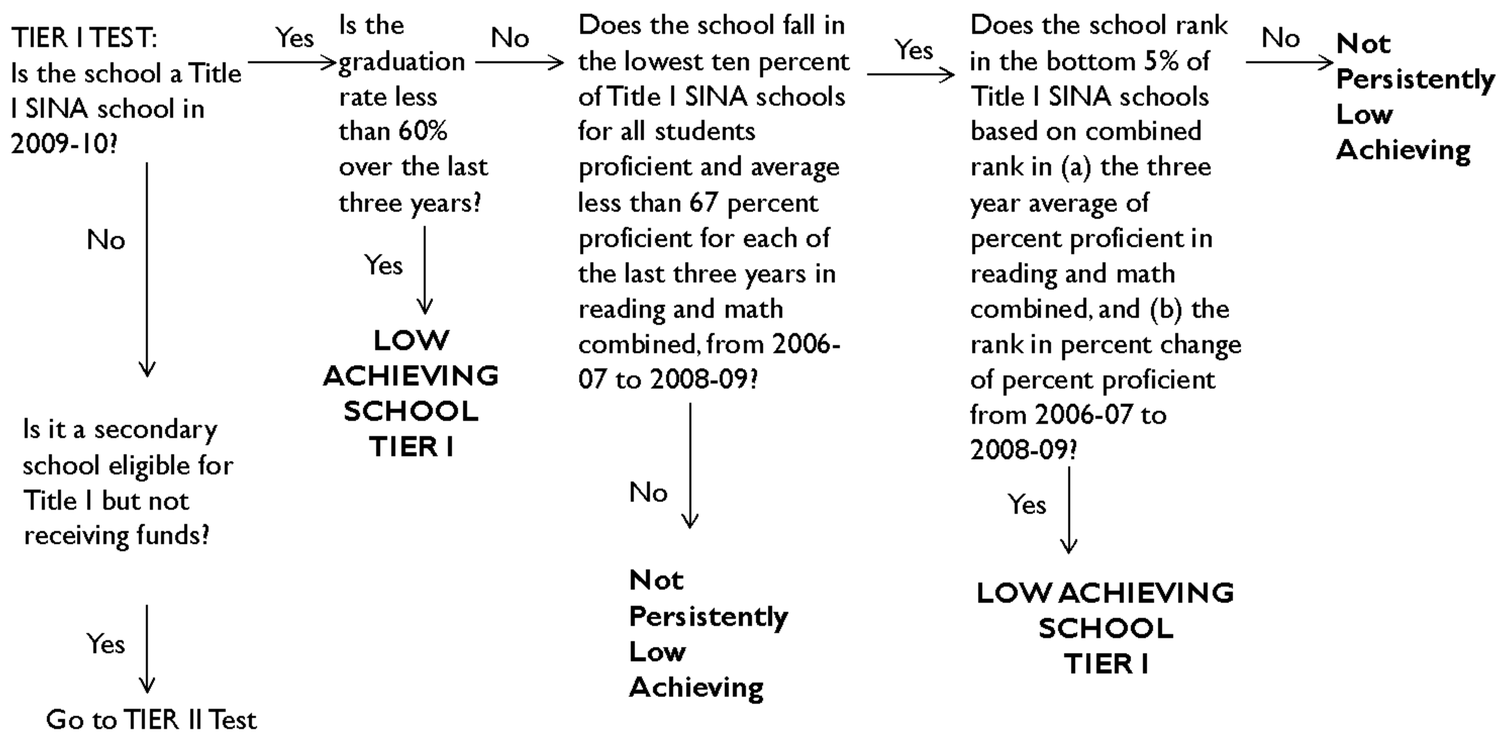
9 18 2. The mission, purpose, innovation, and specialized focus
9 19 of the charter school or innovation zone school.
9 20 4. The method for appointing or forming an advisory
9 21 council for the charter school or innovation zone school.
9 22 The membership of an advisory council appointed or formed in
9 23 accordance with this chapter shall not include more than one
9 24 member of ~~the~~ a participating school board.
9 25 6. The charter school or innovation zone school governance
9 26 and bylaws.
9 27 7. The financial plan for the operation of the
9 28 charter school or innovation zone school including, at a
9 29 minimum, a listing of the support services the school district
9 30 or innovation zone consortium will provide, and the charter
9 31 ~~school's~~ school or innovation zone school's revenues, budgets,
9 32 and expenditures.
9 33 10. The organization of the school or innovation zone
9 34 school in terms of ages of students or grades to be taught
9 35 along with an estimate of the total enrollment of the
10 1 charter school or innovation zone school.
10 2 12. A statement indicating how the charter school or
10 3 innovation zone school will meet the requirements of section
10 4 256F.1, ~~subsection 3~~ as applicable; section 256F.4, subsection
10 5 2, paragraph "a"; and section 256F.4, subsection 3.
10 6 13. Assurance of the assumption of liability by the charter
10 7 school or the innovation zone consortium for the innovation
10 8 zone school.
10 9 14. The types and amounts of insurance coverage to be
10 10 obtained by the charter school or innovation zone consortium
10 11 for the innovation zone school.
10 12 15. A plan of operation to be implemented if the charter
10 13 school or innovation zone consortium revokes or fails to renew
10 14 its contract.
10 15 16. The means, costs, and plan for providing transportation
10 16 for students ~~attending~~ enrolled in the charter school or
10 17 innovation zone school.
10 18 17. The specific statutes, administrative rules, and school
10 19 board policies with which the charter school or innovation zone
10 20 school does not intend to comply.
10 21 Sec. 17. Section 256F.6, subsection 1, Code 2009, is amended
10 22 to read as follows:
10 23 1. a. An approved charter school or innovation zone
10 24 school application shall constitute an agreement, the terms
10 25 of which shall, at a minimum, be the terms of a four=year
10 26 enforceable, renewable contract between ~~the~~ a school board, or
10 27 the boards participating in an innovation zone consortium, and
10 28 the state board. The contract shall include an operating
10 29 agreement for the operation of the charter school or innovation
10 30 zone school. The terms of the contract may be revised at
10 31 any time with the approval of both the state board and the
10 32 school board or the boards participating in the innovation
10 33 zone consortium, whether or not the stated provisions of the
10 34 contract are being fulfilled.
10 35 b. A contract may be renewed by agreement of the school
11 1 board or the boards participating in an innovation zone
11 2 consortium, as applicable, and the state board.
11 3 c. The charter school or innovation zone consortium shall
11 4 provide parents and guardians of students enrolled in the
11 5 charter school or innovation zone school with a copy of the
11 6 charter school or innovation zone school application approved
11 7 pursuant to section 256F.5.
11 8 Sec. 18. Section 256F.7, Code 2009, is amended to read as
11 9 follows:
11 10 256F.7 Employment and related matters.
11 11 1. A charter school or the boards participating in an
11 12 innovation zone consortium shall employ or contract with

11 13 necessary teachers and administrators, as defined in section
11 14 272.1, who hold a valid license with an endorsement for the
11 15 type of service for which the teacher or administrator is
11 16 employed.
11 17 2. The school board or innovation zone consortium, as
11 18 specified in the application, in consultation with the advisory
11 19 council, shall decide matters related to the operation of the
11 20 charter school or innovation zone school, including budgeting,
11 21 curriculum, and operating procedures.
11 22 3. a. Employees of a charter school shall be considered
11 23 employees of the school district.
11 24 b. Employees of an innovation zone school shall be
11 25 considered employees of a board participating in the innovation
11 26 zone consortium.
11 27 Sec. 19. Section 256F.8, subsections 1, 2, 3, 4, and 6, Code
11 28 2009, are amended to read as follows:
11 29 1. A contract for the establishment of a charter school
11 30 or innovation zone school may be revoked by the state
11 31 board, ~~or~~ the school board that established the charter
11 32 school, or the innovation zone consortium that established
11 33 the innovation zone school if the appropriate board or
11 34 consortium determines that one or more of the following
11 35 occurred:
12 1 a. Failure of the charter school or innovation zone
12 2 school to abide by and meet the provisions set forth in the
12 3 contract, including educational goals.
12 4 b. Failure of the charter school or innovation zone
12 5 school to comply with all applicable law.
12 6 c. Failure of the charter school or innovation zone
12 7 school to meet generally accepted public sector accounting
12 8 principles.
12 9 d. The existence of one or more other grounds for revocation
12 10 as specified in the contract.
12 11 e. Assessment of student progress, which is administered
12 12 in accordance with state and locally determined indicators
12 13 established pursuant to rules adopted by the state board,
12 14 does not show improvement in student progress over that
12 15 which existed in the same student population prior to the
12 16 establishment of the charter school or the innovation zone
12 17 school.
12 18 2. The decision by a school board or an innovation zone
12 19 consortium to revoke or to fail to take action to renew a
12 20 charter school or innovation zone school contract is subject to
12 21 appeal under procedures set forth in chapter 290.
12 22 3. A school board or a board participating in an innovation
12 23 zone consortium that is considering revocation or nonrenewal
12 24 of a charter school or innovation zone school contract shall
12 25 notify the advisory council, the parents or guardians of the
12 26 students enrolled in the charter school or innovation zone
12 27 school, and the teachers and administrators employed by the
12 28 charter school or innovation zone school, sixty days prior to
12 29 revoking or the date by which the contract must be renewed, but
12 30 not later than the last day of classes in the school year.
12 31 4. If the state board determines that a charter school or
12 32 innovation zone school is in substantial violation of the terms
12 33 of the contract, the state board shall notify the school board
12 34 or innovation zone consortium and the advisory council of its
12 35 intention to revoke the contract at least sixty days prior to
13 1 revoking a contract and the school board or the school boards
13 2 participating in the innovation zone consortium shall assume
13 3 oversight authority, operational authority, or both oversight
13 4 and operational authority. The notice shall state the
13 5 grounds for the proposed action in writing and in reasonable
13 6 detail. The school board or innovation zone consortium may
13 7 request in writing an informal hearing before the state board

13 8 within fourteen days of receiving notice of revocation of
13 9 the contract. Upon receiving a timely written request for a
13 10 hearing, the state board shall give reasonable notice to the
13 11 school board or innovation zone consortium of the hearing
13 12 date. The state board shall conduct an informal hearing before
13 13 taking final action. Final action to revoke a contract shall
13 14 be taken in a manner least disruptive to students enrolled in
13 15 the charter school or innovation zone school. The state board
13 16 shall take final action to revoke or approve continuation of
13 17 a contract by the last day of classes in the school year. If
13 18 the final action to revoke a contract under this section occurs
13 19 prior to the last day of classes in the school year, a charter
13 20 school or innovation zone school student may enroll in the
13 21 resident district.
13 22 6. A school board revoking a contract or a school board,
13 23 innovation zone consortium, or advisory council that fails
13 24 to renew a contract under this chapter is not liable for
13 25 that action to the charter school or innovation zone school,
13 26 a student enrolled in the charter school or innovation zone
13 27 school or the student's parent or guardian, or any other
13 28 person.
13 29 Sec. 20. Section 256F.8, subsection 7, Code 2009, is amended
13 30 by striking the subsection.
13 31 Sec. 21. Section 256F.9, Code Supplement 2009, is amended
13 32 to read as follows:
13 33 256F.9 Procedures after revocation == student enrollment.
13 34 If a charter school or innovation zone school contract is
13 35 revoked in accordance with this chapter, a nonresident student
14 1 who attended the school, and any siblings of the student,
14 2 shall be determined to have shown "good cause" as provided in
14 3 section 282.18, subsection 4, paragraph "b", and may submit an
14 4 application to another school district according to section
14 5 282.18 at any time. Applications and notices required by
14 6 section 282.18 shall be processed and provided in a prompt
14 7 manner. The application and notice deadlines in section 282.18
14 8 do not apply to a nonresident student application under these
14 9 circumstances.
14 10 Sec. 22. Section 256F.10, subsections 1 and 2, Code 2009,
14 11 are amended to read as follows:
14 12 1. A charter school or innovation zone school shall
14 13 report at least annually to the school board or innovation
14 14 zone consortium, advisory council, and the state board the
14 15 information required by the school board or innovation zone
14 16 consortium, advisory council, or the state board. The reports
14 17 are public records subject to chapter 22.
14 18 2. Not later than December 1~~, 2003, and~~ annually ~~thereafter~~,
14 19 the state board shall submit a comprehensive report~~,~~ with
14 20 findings and recommendations~~,~~ to the ~~senate and house standing~~
~~14 21 committees on education~~ general assembly. The report shall
14 22 evaluate the state's charter school and innovation zone
14 23 school programs generally, including but not limited to, an
14 24 evaluation of whether the ~~pilot programs~~ charter schools
14 25 and innovation zone schools are fulfilling the purposes
14 26 set forth in section 256F.4, subsection 2. The report also
14 27 shall contain, for each charter school or innovation zone
14 28 school, a copy of the charter ~~school's~~ school or innovation
14 29 zone school's mission statement, attendance statistics and
14 30 dropout rate, aggregate assessment test scores, projections of
14 31 financial stability, the number and qualifications of teachers
14 32 and administrators, and number of and comments on supervisory
14 33 visits by the department of education.
14 34 Sec. 23. REPEAL. Section 256F.11, Code 2009, is repealed.
15 1 EXPLANATION
15 2 This bill relates to the approval and revocation of charter
15 3 schools, the establishment of innovation zone schools by

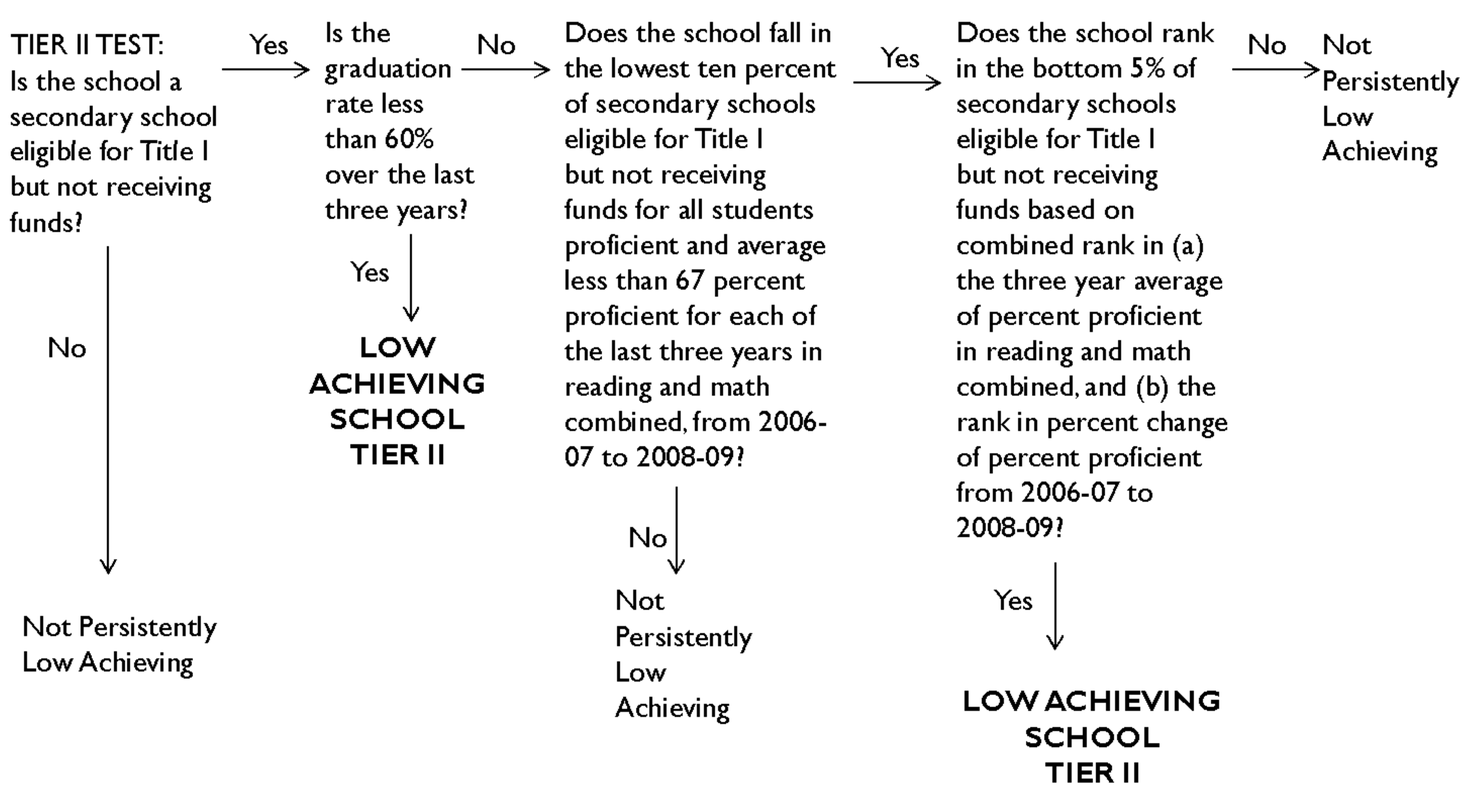
15 4 a consortium of two or more school districts and an area
15 5 education agency, and provides for the implementation of
15 6 interventions for lowest=achieving schools.
15 7 PERSISTENTLY LOWEST=ACHIEVING SCHOOLS. The bill directs the
15 8 director of the department of education to require a school
15 9 district that has one or more attendance centers identified by
15 10 the department as a persistently lowest=achieving school to
15 11 implement one or more of the interventions mandated by the U.S.
15 12 department of education.
15 13 A school district required to implement one or more
15 14 interventions and the employee organization representing the
15 15 school district's teachers must meet at reasonable times to
15 16 negotiate a memorandum of understanding that contains an
15 17 agreement on the specific intervention to be implemented and a
15 18 provision stating that the terms of any collective bargaining
15 19 agreement between the parties shall remain in effect and
15 20 unaltered except as specifically agreed to in the memorandum
15 21 of understanding. If the parties are unable to reach an
15 22 agreement within 45 days, the school district and the employee
15 23 organization shall select an impartial and disinterested
15 24 person to serve as a mediator, who shall not compel the
15 25 parties to agree. If mediation fails, the school district
15 26 shall not receive any school improvement funds, under Tit.I
15 27 of the federal Elementary and Secondary Act of 1965, for the
15 28 attendance center identified as a persistently lowest=achieving
15 29 school. The memorandum of understanding remains in effect for
15 30 the period of time that an attendance center is identified as a
15 31 persistently lowest=achieving school unless a duration period
15 32 is included in the memorandum of understanding or the parties
15 33 mutually agree to amend the memorandum of understanding.
15 34 CHARTER SCHOOLS.The bill eliminates references to the
15 35 pilot program status of the state's charter school law;
16 1 eliminates a limitation on the number of charter schools the
16 2 state board of education may approve for operation; adds a
16 3 factor for which a charter school contract may be revoked;
16 4 and eliminates the future repeal of Code chapter 256F, which
16 5 provides for the creation or conversion of charter schools by
16 6 school districts.
16 7 The additional factor for which the state board or a
16 8 school board may revoke a charter school contract is when an
16 9 assessment of student progress administered in accordance
16 10 with state and locally determined indicators does not show
16 11 improvement in student progress over that which existed in the
16 12 same student population prior to establishment of the charter
16 13 school.
16 14 INNOVATION ZONES.The bill provides for the establishment
16 15 of innovation zone schools by two or more school districts and
16 16 an area education agency as part of the state's program of
16 17 public education. The purpose of an innovation zone school
16 18 is to improve student learning. Like charter schools, an
16 19 innovation zone school is not required to comply with state
16 20 statutes, rules, or regulations applicable to a school, a
16 21 school board, or a school district, except those relating
16 22 to applicable federal, state, and local health and safety
16 23 requirements; civil and human rights; financial audit
16 24 requirements; collective bargaining and practitioner contracts;
16 25 professional development and practitioner evaluation; special
16 26 education; transportation of students; comprehensive school
16 27 improvement plan requirements; and core curriculum and core
16 28 content standards requirements. Innovation zone schools are
16 29 subject to the same general operating, contract, renewal and
16 30 revocation, and report requirements as charter schools.
LSB 5609SV (4) 83
kh/rj

Defining Persistently Low Achieving Schools



SINA stands for Schools in Need of Assistance.

Defining Persistently Low Achieving Schools



Step 1: Measuring Percent Proficient

$$\text{Percent proficient in reading and math} = \left(\frac{(\text{n proficient reading} + \text{n proficient math})}{(\text{n tested reading} + \text{n tested math})} \right) * 100$$

Step 2: Three-Year Average

$$\text{Average} = \left(\frac{(\%\ \text{prof } 2009 + \%\ \text{prof } 2008 + \%\ \text{prof } 2007)}{3} \right) * 100$$

Only schools that are in the bottom ten percent of the Tier I or II groups (Title I SINA schools or secondary school eligible for Title I but not receiving funds) and average below 67 percent proficient for each of the last three years are considered in the next step.

Step 3: Measuring Change

$$\text{Change} = \left(\frac{(\%\ \text{proficient } 2009 - \%\ \text{proficient } 2007)}{(\%\ \text{proficient } 2007)} \right) * 100$$

Step 4: Proficiency Change Ranking

Each school in the bottom ten percent of the Tier I or II groups and average below 67 percent proficient for each of the last three years is ranked (the groups are ranked separately) in ascending order of the percent change in percent proficient.

School	Proficiency Change	Change Rank
B	-14.90	1
A	0.34	2
C	5.62	3

Step 5: Proficiency Ranking

Each school in the bottom ten percent of the Tier I or II groups and average below 67 percent proficient for each of the last three years is ranked (the groups are ranked separately) in ascending order of the three year average of percent proficient.

School	Average Proficiency	Proficiency Rank
A	35.90	1
B	45.00	2
C	64.87	3

Step 6: Multiply Ranks

The proficiency and change ranks are multiplied to determine the final ranking. The lowest five percent of each Tier I and II group (or five, whichever is greater) are determined to be Persistently Low Achieving Schools.

School	Proficiency Rank	Change Rank	Final Rank
A	1	2	2
B	2	1	2
C	3	3	9

Iowa Support System for Schools and Districts in Need of Assistance (SINA & DINA)

Audit Phase

Series of Events

Date	Event
	1) Meet with the building and/or district team. (approximately 1 hour) ● Share the purpose of the SINA/DINA support process and phases, Audit Phase in particular, the audit process, and the product. The product is a profile of the building/district with identified potential areas of concern. ● Share the audit domains, questions, and tools including the *Practices Inventory*. ● Determine the interest in working through the SINA/DINA support process. ● Arrange next meetings and determine which documents on the checklist the building/district will collect and which the Audit Team will collect. ● Arrange when teachers will complete the *Practices Inventory* (optional). ● Tools: Guiding Principles for Iowa Support System, Graphic of State Support for Schools in Need of Assistance, "Official" SINA/DINA Timetable, School Improvement for Schools Facing Challenging Circumstances (article), Reflective Activity – Scenarios, Leverage Points for a Strong System for Learning, Audit Narrative, Series of Events, Review of Series of Events, Audit Profile, Questions for Developing the Building/District Profile, Documents for Review, Practices Inventory, Sample of Practices Inventory
	2) Review building/district documents (spread over approximately 5 school days) ● The SINA/DINA Audit Team will review the documents and begin answering the audit questions. This is the first step in constructing the building/district profile. ● As the team reviews documents, they may wish to write questions for the interviews with the administration and/or teachers. ● If the building/district has completed the Practices Inventory, be sure to review those data and include them in the profile and use them to generate more interview questions. ● Complete the review of the documents prior to the interviews with administrators and teachers (See Events 3 and 4). ● Tools: Audit Profile, Documents for Review, Practices Inventory, Audit Narrative, Event 2 Activity Packet
	3) Interview the building/district administration (approximately 1 - 2 hours) ● The Support Team will interview the building/district administrators in order to clarify the initial findings in the profile and answer additional questions raised during the review of documents and data from the Practices Inventory. (See Event 2). ● Tools: Audit Narrative, Series of Events, Review of Series of Events, Sample Reflective Conversation Questions for Administrators and Teachers, Audit Profile
	4) Interview the teachers (typically 45 minutes to 1 hour) (Optional in the completion of DINA audit) ● The Support Team will interview teachers (group of 6 to 8) from the building/district in order to further clarify the profile and answer additional questions raised during the review of documents and data from the Practices Inventory. ● The group of teachers to be interviewed can be determined in several ways. Refer to the Audit Narrative for guidance in this area. ● Tools: Audit Narrative, Series of Events, Review of Series of Events, Sample Reflective Conversation Questions for Administrators and Teachers, Audit Profile
	5) Create a final version of the building/district profile. ● The SINA/DINA Audit Team will draft a final version of the profile that incorporates the findings from the documents, Practices Inventory, and interviews. ● All audit questions need to be addressed either with data or by noting "No evidence at this time." ● For each *Area for Further Study*, there should be a question that describes the concern and leads to further investigation by the Diagnosis Team. ● The Audit Team should create a summary, highlighting strengths and *Areas for Further Study*. The *Areas for Further Study* should be placed in a prioritized list. See the Audit Narrative for guidance on prioritization. ● Tools: Audit Narrative, Series of Events, Review of Series of Events, Audit Profile, Guidance for Reviewing Building/District Profile, Gold Standard Sample of Audit Profile, Guidance for Reviewing Profile – Gold Standard Example, Sample of Audit Profile 2, Guidance for Reviewing Profile – Audit Profile Sample 2, Sample of Audit Profile 3, Guidance for Reviewing Profile – Audit Profile Sample 3
	6) Meet with building/district administrators and/or leadership team (approximately 1 - 2 hours) ● Invite Diagnosis Team members if not already on team ● The Audit Team will share the summary of the findings, the final profile, the data report from the Practices Inventory, and the prioritized list of Areas for Further Study with the building/district administrators, and/or the building/district leadership team and possibly the entire building staff. Presentations may also be made to the district's board of education. ● This discussion will lead directly into the next phase, Diagnosis. ● Tools: Audit Profile, Audit Profile - Gold Star Example, Audit Narrative, Series of Events, Review of Series of Events, Guidance for Reviewing the Building Profile

Iowa Support for Schools and Districts in Need of Assistance (SINA & DINA)
Design Phase: Steps for Completion of Action Plan

Date	Steps
	1) Preparation for Completion of Action Plan: ● Reviews the federal requirements for action plan. ● Reviews the completed Diagnosis Worksheet from Phase II. ● Plans for the evaluation which may include the theory of change, KASAB, logic model, and the evaluation framework. (See Evaluation for further details) ● Reviews the essential elements of the action plan – alignment with CSIP, incorporation of actions for appropriate critical elements for the domains based on identified areas of concern, provision for formative and summative data, development of two-year plan with one-year budget, grounded in scientifically based/evidence-based research, and reflection of the principles in the Iowa Professional Development Model. **Tools: The Domains and Critical Elements, Diagnosis Worksheet, Diagnosis Worksheet for Westlake Middle School, KASAB**
	2) Completion of the Introduction of the Action Plan: ● Identifies the district's long-range CSIP goal for identified area. ● Identifies the persons writing the plan. ● Completes the diagnosis summary that includes an explanation of why previous improvement efforts were unsuccessful. ● Answers the Constant Conversation Question: What do data tell us about student learning needs? **Tools: Action Plan, Supporting Information for the Title I SINA/DINA Action Plan, Diagnosis Worksheet for Westlake Middle School**
	3) Finalization of the Building/District Goal Statement: ● Addresses student achievement. ● Supports prioritized learning needs. ● Is specific, measurable, attainable, results-driven, and time bound. **Tools: Action Plan, Supporting Information for the Title I SINA Action Plan, Diagnosis Worksheet for Westlake Middle School**
	4) Identification of Indicators of Progress: ● Identifies the summative evaluation question(s), the indicators of progress, and the measurement tools providing the data noting progress toward the student achievement goal(s). ● Identifies the formative data question(s), the indicators of progress, and the measurement tools providing the formative data indicating progress toward the goal(s). ● Answers the Constant Conversation Question: How will/do we know student learning has changed? **Tools: Action Plan, Supporting Information for the Title I SINA/DINA Action Plan, Diagnosis Worksheet for Westlake Middle School, Writing Evaluation Questions, Data Collection Methods**
	5) Identification of Scientifically Based/Evidence-Based Research and the Content for the Professional Development Identified through Research: ● Focuses on the content of the professional development identified through research. ● Chronicles the research citation. ● Answers the Constant Conversation Question: What will be done to meet student learning needs? **Tools: Action Plan, Supporting Information for the Title I SINA/DINA Action Plan, Diagnosis Worksheet for Westlake Middle School**
	6) Identification of Peer Review Process: ● Identifies schools/AEA/districts/individuals involved in peer review, process for peer review, and date of completed process. **Tools: Action Plan, Supporting Information for the Title I SINA/DINA Action Plan, Diagnosis Worksheet for Westlake Middle School, Configuration Map for Action Plan, Tuning Protocol, Checklist for Analysis of SINA/DINA Action Plan, Peer Review Agenda Sample**
	7) Identification of Implementation – How Will the Goal Be Achieved? ● Identifies specific action steps and appropriate activities. ● Answers the Constant Conversation Question: What actions/activities will we use to address prioritized needs, established goals, and any gaps between current and research-based practice? ● Addresses expected changes in students/learning and teachers/teaching and other stakeholders as well as the formative and summative data to support each. ● Notes the alignment and responsibilities of each action. ● Provides for the periodic monitoring and adjustment of the action plan. **Tools: Action Plan, Supporting Information for the Title I SINA/DINA Action Plan, Diagnosis Worksheet for Westlake Middle School, Configuration Map for Action Plan, Checklist for Analysis of SINA/DINA Action Plan**
	8) Identification of Professional Development and Building/District Leadership Team: ● Identifies dates, times, and focus of professional development. ● Identifies building/district leadership team, including names and roles. ● Identifies projected meeting dates and times of building/district leadership team. **Tools: Action Plan, Supporting Information for the Title I SINA/DINA Action Plan, Diagnosis Worksheet for Westlake Middle School, Configuration Map for Action Plan, Checklist for Analysis of SINA/DINA Action Plan**

Iowa Support for Schools and Districts in Need of Assistance (SINA & DINA) Diagnosis Phase - Steps of Diagnosis

Date	Step
	1) Current Reality: • Review the audit. • Review student achievement data. • Request additional data as needed. • Organize and analyze multiple sources/points of data for deeper understanding. • Request additional data as needed. • Document prioritized areas from the audit and the refined current reality on the Diagnosis Worksheet. • Tools: Diagnosis Worksheet , Questions for Areas of Concern/Red Flags, Item Analysis Summary for ITBS/ITED, Performance Profile Analysis, Questioning Your Data , Westlake Middle School Audit Profile, Guidance for Reviewing Building Profile – Westlake Middle School, Diagnosis Worksheet for Westlake Middle School, Grade 6 Math Data, Grade 7 Math Data, Grade 8 Math Data
	2) Desired State: • Consult expert content specialist(s). • Review research. • Develop the picture of your desired state. • Document the desired state on the Diagnosis Worksheet. • Tools: Structured Response Sheet, Content Network Tool for Reviewing Research, Content Network Review Article - Math, Diagnosis Worksheet of Westlake Middle School
	3) Gap Analysis: • Summarize the Current Reality. • Summarize the Desired State. • Identify deficits or the gap between desired state and current reality. • Identify themes and patterns across deficit areas/gaps, using guiding questions. • Document the gap analysis on the Diagnosis Worksheet. • Tools: Diagnosis Worksheet for Westlake Middle School, Gap Identification Worksheet, Forced Field Analysis, Planning Template, Fishbone Graphic Organizer (Current Reality and Desired State), Diagnosis Worksheet
	4) Root Causes: • Given what you identified in your gap analysis, determine the critical cause/effect relationships from your prioritized areas • Document the root cause(s) on the Diagnosis Worksheet. • Tools: Diagnostic Tree, Pareto Diagram, Cause and Effect Diagram, Relations Diagram, Five Whys – *Iowa Evaluator Approval Training Program* (adapted), Diagnosis Worksheet
	5) Solutions: • Identify possible solutions correlated to root causes - if the solution is related to instruction or professional development, it must be research based. • Prioritize based on research (e.g. greatest impact on student achievement, response to intervention). • Document the solution(s) on the Diagnosis Worksheet. • Tools: Nominal Group Technique, Diagnosis Worksheet
	6) Theory of Change/If… Then Statements: • Based on prioritized solution(s), complete a theory of change and/or write "if…then" statement(s). • The Theory of change results in specific actions to achieve the goal(s). "If…then" statements may either result in student achievement goal statements or action plan steps toward a student achievement goal. • Document theory of change and/or "if…then" statements on the Diagnosis Worksheet. • Tools: If . . . Then Worksheet, Theory of Change activities, ORID Questioning PowerPoint – *Iowa Evaluator Approval Training Program* (adapted), Diagnosis Worksheet, Completed Diagnosis Worksheet for Westlake Middle School

See Steps for Evaluation that include Planning for Evaluation.

Iowa Support for Schools and Districts in Need of Assistance (SINA & DINA) Monitoring and Assessment Phase: Steps for Evaluation

Adapted from Source: ***Training Manual for Assessing Impact: Evaluating Staff Development***
by Joellen Killion with Linda Munger, Pat Roy, and Parker McMullen © 2003

Date	Steps
	1) Planning the Evaluation – Assessing Evaluability: • Set goal. • Determine standards of success. • Identify indicators of success. • Articulate the theory of change, the sequence of components and underlying assumptions that achieve the intended results. • Create the logic model, including the inputs/resources, activities/processes, initial outcomes (usually knowledge and skills) of the activities, intermediate outcomes (usually attitudes, aspirations, and behaviors) of the activities, and long-term result(s) intended from the activities. • Tools: Guiding Principles for Iowa Support System; The Iowa Professional Development Cycle; Evaluation of Action Plan/Professional Development; Writing SMART Goals, Standards of Success, Indicators of Success, and Data Points; Creating a Theory of Change – Blue and Green Card Activity; Charting the Logic Model
	2) Planning the Evaluation - Formulating Evaluation Questions: • Formulate evaluation questions that provide structure and focus to the evaluation framework. Consideration should be given to each question being reasonable, appropriate, answerable, specific in terms of program success, and specific in terms of measure of performance. • Tools: Guiding Principles for Iowa Support System; Evaluation Questions – Examples and Commentary; Writing Evaluation Questions
	3) Planning the Evaluation – Constructing Evaluation Framework: • Construct evaluation questions based on what we need to know, how we will know, who/what will tell us, and how we will collect the data. • Tools: Evaluation Framework Worksheet; Data Collection Methods
	4) Conducting the Evaluation – Collecting Data: • Collect data systematically. • Tools: Guiding Principles for Iowa Support System; Monitoring Key Activities; Data Collection Plan
	5) Conducting the Evaluation – Organizing and Analyzing Data: • Organize, analyze, and display the data. • Tools: Data Analysis Methods, Evaluation Framework Worksheet
	6) Conducting the Evaluation - Interpreting Data: • Make meaning from the data, resulting in changes based on merit and impact. • Tools: Evidence vs Claim
	7) Reporting the Evaluation – Disseminating Results and Findings: • Consider the audiences for the information. • Send same message to all audiences but use forms of communication appropriate to each audience. • Tools: Guiding Principles for Iowa Support System
	8) Reporting the Evaluation – Evaluating the Evaluation: • Answer the questions, "What have we learned from the evaluation process?" "What would we do again?" and "What would we change?" • Tools: Configuration Map for Phase V

Iowa Support for Schools and Districts in Need of Assistance (SINA & DINA) Implementation Phase Actions for Implementation

Date	Steps
	1) Assure Delivery of the Interventions/Strategies: • Meet regularly to monitor the delivery of actions and activities identified in the approved action plan. • Have a focused review process which encourages timely completion of scheduled activities and offers opportunities to revise components of the plan as needed. • Tools: Action Plan, How Will You Monitor Your Implementation, Monitoring Key Activities, Monitor the Promotion of Action Plan
	2) Facilitate Ongoing Support to the Building/District Staff Members: • Provide adequate time for professional development. • Check for individual and organizational change. • Provide frequent opportunities for teachers to collaborate with peers. • Plan for assistance to both new and experienced staff. • Assure adequate resources. • Tools: Collaborative Log for Monitoring Implementation of Data
	3) Monitor Teacher Implementation of Professional Development and Learnings: • Check on a regular basis for frequency and fidelity of implementation of professional development. • Modify or adjust delivery of professional development and/or actions of plan based upon analysis of implementation data. • Report progress on a regular basis • Celebrate successes. • Tools: How Will You Monitor Your Implementation? Collaborative Log for Monitoring Implementation Data, Checklist for Monitoring Implementation, Checklist for Monitoring Implementation – AEA 12, Monitoring Implementation - Example
	4) Provide for Ongoing Formative Assessment of Student Performance: • Use formative data on a regular basis to assure increase in student performance. • Modify or adjust delivery of actions/activities of action plan based upon analysis of formative data. • Report progress on a regular basis. • Celebrate successes. • Tools: Looking at the Data – Answering the Questions
	5) Direct and Organize Data Collection Relative to Both Implementation and Impact on Student Performance: • Follow the evaluation plan within the action plan, including both formative and summative assessments that check implementation of professional development and impact on student learning. • Tools: Analyzing and Reporting Our Data, Looking at the Data – Answering the Questions, Looking at Implementation Data – Example, Initial Study of Implementation Data, Advanced Study of Implementation Data, Westlake Middle School Action Plan, Math Log and Example
	6) Build the Capacity of the District/School for Ongoing School Improvement: • Share the plan with building staff, district office, board of education, students, parents, and community. • Provide regular updates of progress with action plan. • Tools: Guiding Principles for Iowa Support System, Monitor the Promotion of Action Plan, How Will You Monitor Your Implementation?

For Intersect:

Title: Iowa Schools in Need of Assistance (SINA): 6-year trend

Contact Information:
Thomas E. Deeter, Ph.D.
Iowa Department of Education
Grimes State Office Building
400 E. 14th Street
Des Moines, IA 50319

Author's note: This paper was presented at the 2008 Iowa Educational Research and Evaluation Association annual meeting, Johnston, IA, December

Background:

NCLB requires states to identify schools and districts as needing improvement if they miss Adequate Yearly Progress (AYP) for two years. Trends of the Schools in Need of Assistance (SINA) list over the past six years is provided, with results discussed within the context of factors contributing to the identification.

Focus:

The purpose of this project was to build a historical record of schools and districts placed on the Schools In Need of Assistance (SINA) list, in accordance with the No Child Left Behind Act of 2001. Such a record provides a tool to monitor trends in the number of schools and districts not meeting Adequate Yearly Progress (AYP) requirements for two or more years. A secondary purpose was to build a timeline of significant events in Iowa's AYP history, which will establish a context for interpreting the historical trend.

Methodology:
Data used to build the trend was gathered from the Iowa Department of Education's *The State Report Card for No Child Left Behind* for six years, 2003 through 2008. Data were also extracted from internal Department of Education files to identify schools and districts that were removed from SINA status after having met AYP for two years. Finally, a 2005 internal study of the AYP decision process was used to removed schools inadvertently placed on the 2005 SINA list after the Iowa alternate assessment results were omitted from the AYP decision process.

Results:
Beginning with 12 schools on the SINA list in 2003, the number of schools placed on the SINA list have steadily increased, from 66 schools in 2004, to 136 schools in 2008. Significant milestones in Iowa's AYP history include:

A) 2005: This was the year in which the first intermediate goal was to be achieved. This was the initial step up in proficiency targets for Iowa schools. Forty-one schools were placed on the SINA list for the first time. Including those removed as a result of the internal validation study, the net change was 28 more schools on the SINA list in 2005 than in 2004.

B) 2006: This was the first year that students in grades 3, 5, 6, and 7 were to be included in AYP decisions along with grades 4, 8, and 11. For this year, Iowa was required by the

United States Department of Education to combine grades to make a single AYP determination for each site. Thus, Iowa adopted a Proficiency Index model currently being used by Mississippi and Alabama. During this year, twenty schools were added to the SINA list for the first time, while fifteen schools were removed, for a net change of 5 schools.

C) 2007: Iowa Growth Model used for the first time.

D) 2008: This was the year in which the achievement targets "stepped up" as a second intermediate goal. Like in 2005, an intermediate goal increase raises an achievement target about 6% (on average). This required each grade at each site to improve their percent of proficient students about 6% in each content area. 2008 experienced the addition of eighteen new schools to the SINA list, and the removal of three schools, for a net gain of fifteen schools.

Table 1. Schools In Need of Assistance (SINA) List

Year	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
# Schools ON	12	66	94	99	121	136
# Schools NEW	12	54	41	20	28	18
# Schools Removed			13	15	6	3
NET Change		+54	+28	+5	+22	+15
Total # Schools	1500	1491	1532	1494	1491	1477
% School ON	0.80	4.43	6.14	6.63	8.12	9.21

Table 2. Districts In Need of Assistance (DINA) List

Year	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
# Districts ON	0	9	14	15	12	13
# Districts NEW		9	5	1	0	1
# Districts Removed			0	0	3	2
NET Change		9	+5	+1	-3	+1
Total # Districts		370	367	365	365	364
% Districts ON		2.43	3.81	4.11	3.29	3.57

The Iowa Growth Model

Iowa received approval from the United States Department of Education to incorporate student achievement growth into AYP decisions for 2007 and 2008. In order to achieve Adequate Yearly Growth (AYG), a student would need to improve from a lower non-proficient achievement level to a higher non-proficient achievement level (there are three levels). Students who meet AYG were included with other proficient students for AYP determinations.

At the school level, about the same number of schools had a subgroup that met AYP using the growth model for both 2007 and 2998. However, about only one half of the schools in 2008 met AYP due to growth compared to 2007. At the district level, about the same number of districts had a subgroup that met AYP using the growth model for both 2007 and 2008. However, in 2007, 77 districts met AYP, in part due to use of the growth model, whereas in 2008, only 9 district met AYP, in part due to use of the growth model.

Table 3. Growth Model Results

	Schools	Districts
2006-07		
Total # with at least one group	139	78
Met AYP Math	79	50
Met AYP Reading	87	65
Number meeting AYP	128 (38 both)	77 (38 both)
2007-08		
Total # with at least one group	142	83
Met AYP Math	36	5
Met AYP Reading	33	4
Number meeting AYP	65 (4 both)	9

Summary:

The number of Iowa schools on the SINA list has steadily increased from 2003 to 2008. Much of the increase in the number of identified schools can be attributed to increasing intermediate goals in 2005 and 2008, requiring most elementary and middle schools to improve the number of proficient students 2.5 times in 2005 compared to 2004 and 2.8 times in 2008 compared to 2004.

Use of the Iowa Growth Model helped a significant number of schools meet AYP. Had the growth model not been in effect, about five times the number of SINA schools each year would have missed AYP, with a large proportion of those schools likely being identified as SINA schools.

The future of AYP in Iowa will see an increasing number of schools and districts on the SINA list, largely due to the increasing achievement targets required by NCLB. Larger districts and schools that have more subgroups that count toward AYP decisions will be a significant part of this upward direction. Trends like those reflected in Table 1 and Table 2 are predicted to continue, followed by a steep increase in numbers on the lists, due to rapidly increasing achievement targets. The implication of this information is that districts and schools need to pay attention to ALL subgroups of lower achieving students, not just those that are historically disadvantaged.

FACT SHEET:
SCHOOL ADMINISTRATION MANAGER (SAM) PROJECT

Research makes it clear that effective leadership is critical to improving student achievement. In an era of limited resources and increasing pressure to turn around low-performing schools, promoting more effective school leadership is the best way to help students and schools meet higher expectations. Principals make this happen by helping change schools into professional learning communities that focus on improving teaching and learning.

Principals, however, continue to see their roles and responsibilities expand. It was once enough for principals to be good building managers. Today, they are held accountable for improving student achievement. Even though principals want to be more involved in leading instructional improvement, data show that principals can spend up to 75 percent of their time on management duties. With support to share non-instructional tasks, principals can change this equation and spend dramatically more time on practices that lead to improved student learning, including:

- **Setting directions**, including a vision, goals and high expectations;
- **Becoming a leader of leaders** by working with other key staff members to distribute various leadership roles;
- **Developing teachers and other staff members** by providing instructional leadership and quality professional development and building strong professional learning communities; and
- **Redesigning and transforming the school** by building a culture that is focused on teaching and learning to achieve goals.

SAM: A PROCESS TO GIVE PRINCIPALS THE TIME THEY NEED TO IMPROVE INSTRUCTION AND INCREASE LEARNING

The national School Administration Manager (SAM) Project brings together tools, training and strategies to help principals focus more time on instructional leadership. The project's goal is to direct a greater percentage of the principal's time to teaching practice, student learning and school improvement, rather than management responsibilities. It is an efficient and cost-effective way to give principals tools and strategies to focus more time on instructional leadership.

Funded by The Wallace Foundation, the SAM Project has been in development for several years as a pilot in districts nationwide. It began in Louisville, KY, in 2002 as the Alternative School Administration Study. The study looked at conditions that prevented principals from making instructional leadership a priority and developed strategies to help change those conditions.

Preliminary results in three Louisville schools are promising. Three years after participating in the SAM Project, principals spent more than 70 percent of their time on instructional issues and student achievement increased.

Today, educators in nine Wallace partner states are developing and implementing the SAM Project, including California, Delaware, Georgia, Illinois, Iowa, Kentucky, Missouri, New York and Texas. Their efforts are being reviewed by a team of researchers. The results, expected in mid-2009, will help inform next steps for the work.

THE NATIONAL SAM PROJECT IS A STATEWIDE/DISTRICTWIDE CHANGE STRATEGY

The SAM Project goes beyond simply helping individual principals improve instruction in their schools. It aims to ensure that the entire community is aware that understanding and changing principal time use is critical to transforming schools. This is a complex change strategy that SAMs can help facilitate.

How the SAM Project Works

The core elements of the SAM Project are:

1) Willingness to commit to increasing time for instructional leadership. Districts and principals voluntarily participate in the SAM Project.

2) Baseline Time/Task Analysis™ Data Collection. Data collectors shadow principals for five days and record in five-minute increments how much time they spend on management, instructional or personal tasks. Principals use this data to create goals for the time they spend on instructional leadership.

3) Engagement with a SAM. The School Administration Manager or SAM may be a new staff position or an existing staff person who takes on new duties. The SAM meets with the principal daily to analyze how time is being used and to shift managerial duties to others. During meetings, they use a software calendar program, TimeTrack™, which was developed for this purpose. The goals are to help shift managerial duties to others and to increase the principal's time on leading instructional improvement.

4) External coaching. The principal and SAM also meet monthly with a Time Change Coach, a retired school administrator who is selected and trained to discuss progress and challenges and identify training needs with the principal/SAM team. The Time Change Coach also builds support networks of principals and SAMs throughout the SAM network.

5) Follow-up Time/Task Analysis Data Collection one year later to assess improvement.

The SAM Project Helps Principals Transform Their Schools

The SAM Project helps principals use data to reflect on their practice and develop a plan to reframe their roles, become more effective leaders and improve student achievement. The process gives principals tools to analyze results from school and community surveys, establish baseline data and set goals to increase time spent on instruction.

The SAM Project also encourages principals to build strong professional development communities. As part of the process, principals not only agree to engage in their own professional development using data to guide self-reflection, but also to work with staff to distribute leadership responsibilities and share decisionmaking roles. The project is an objective, low-stakes assessment that gives principals constructive feedback.

In addition, the SAM Project helps principals strengthen relationships with their school communities to help improve teaching and learning. It asks that principals voluntarily seek assistance and advice on how to be better school leaders from the teachers, staff, parents and students at their schools.

While more research is underway to understand the promise and challenges of expanding the SAM Project, preliminary community surveys note that teachers, parents and students notice and appreciate how SAMs are helping principals change their focus to improving instruction in order to raise achievement for all students.

For more information and research on the SAM Project, visit www.wallacefoundation.org/SAM. For information and research about other education leadership issues, visit The Wallace Foundation's Knowledge Center, www.wallacefoundation.org.

The SAM Project is led by Mark Shellinger, who has created two tools for which he claims trademark status: Time/Task Analysis and TimeTrack. For more information, contact Mark Shellinger at 502-777-7760; Fairbanks@insightbb.com; or www.SAMsConnect.com.

© The Wallace Foundation. All rights reserved.

APPENDIX F

Appendix F

Attachment Title	Relevant Selection Criterion	Page #
IC 257.1 State School Foundation Program—State Aid	(F)	Appendix F, page 1

257.1 STATE SCHOOL FOUNDATION PROGRAM -- STATE AID.

1. *Program established.* A state school foundation program is established for the school year commencing July 1, 1991, and succeeding school years.

2. *State school foundation aid -- foundation base.*

a. For a budget year, each school district in the state is entitled to receive foundation aid, in an amount per pupil equal to the difference between the amount per pupil of foundation property tax in the district, and the combined foundation base per pupil or the combined district cost per pupil, whichever is less. However, if the amount of foundation aid received by a school district under this chapter is less than three hundred dollars per pupil, the district is entitled to receive three hundred dollars per pupil unless the receipt of three hundred dollars per pupil plus the per pupil amount raised by the foundation property tax exceeds the combined district cost per pupil of the district for the budget year. In that case, the district is entitled to receive an amount per pupil equal to the difference between the per pupil amount raised by the foundation property tax for the budget year and the combined district cost per pupil for the budget year.

b. For the budget year commencing July 1, 1999, and for each succeeding budget year the regular program foundation base per pupil is eighty-seven and five-tenths percent of the regular program state cost per pupil. For the budget year commencing July 1, 1991, and for each succeeding budget year the special education support services foundation base is seventy-nine percent of the special education support services state cost per pupil. The combined foundation base is the sum of the regular program foundation base, the special education support services foundation base, the total teacher salary supplement district cost, the total professional development supplement district cost, the total early intervention supplement district cost, the total area education agency teacher salary supplement district cost, and the total area education agency professional development supplement district cost.

c. For the budget year commencing July 1, 1999, the department of management shall add the amount of the additional budget adjustment computed in section 257.14, subsection 1, to the combined foundation base.

3. *Computations rounded.* In making computations and payments under this chapter, except in the case of computations relating to funding of special education support services, media services, and educational services provided through the area education agencies, and the teacher salary supplement, the professional development supplement, and the early intervention supplement, the department of management shall round amounts to the nearest whole dollar.

4. *Legislative review.* The provisions of this chapter shall be subject to legislative review at least every five years. The review shall be based upon a school finance formula status report containing the recommendations of a legislative interim committee appointed to conduct a review of the school finance formula, to be prepared with the assistance of the department of education, in association with the departments of management and revenue. The report shall include recommendations for school finance formula changes or revisions based upon demographic changes, enrollment trends, and property tax valuation fluctuations observed during the preceding five-year interval; an analysis of the operation of the

school finance formula during the preceding five-year interval; and a summary of issues that have arisen since the previous review and potential approaches for their resolution. The first such report shall be submitted to the general assembly no later than January 1, 2005, with subsequent reports developed and submitted by January 1 at least every fifth year thereafter.

Section History: Recent Form

89 Acts, ch 135, § 1; 91 Acts, ch 267, §517; 95 Acts, ch 130, §1; 96 Acts, ch 1197, §5, 6; 99 Acts, ch 2, §1, 4; 99 Acts, ch 178, §1, 10; 2000 Acts, ch 1186, §2; 2003 Acts, ch 145, §286; 2008 Acts, ch 1181, §93, 94

Referred to in § 257.3, 257.4, 257.12, 257.34

257.8 STATE PERCENT OF GROWTH -- ALLOWABLE GROWTH.

1. *State percent of growth.* The state percent of growth for the budget year beginning July 1, 2009, is four percent. The state percent of growth for the budget year beginning July 1, 2010, is two percent. The state percent of growth for each subsequent budget year shall be established by statute which shall be enacted within thirty days of the submission in the year preceding the base year of the governor's budget under section 8.21. The establishment of the state percent of growth for a budget year shall be the only subject matter of the bill which enacts the state percent of growth for a budget year.

2. *Categorical state percent of growth.* The categorical state percent of growth for the budget year beginning July 1, 2010, is two percent. The categorical state percent of growth for each budget year shall be established by statute which shall be enacted within thirty days of the submission in the year preceding the base year of the governor's budget under section 8.21. The establishment of the categorical state percent of growth for a budget year shall be the only subject matter of the bill which enacts the categorical state percent of growth for a budget year. The categorical state percent of growth may include state percents of growth for the teacher salary supplement, the professional development supplement, and the early intervention supplement.

3. *Allowable growth calculation.* The department of management shall calculate the regular program allowable growth for a budget year by multiplying the state percent of growth for the budget year by the regular program state cost per pupil for the base year and shall calculate the special education support services allowable growth for the budget year by multiplying the state percent of growth for the budget year by the special education support services state cost per pupil for the base year.

4. *Alternate allowable growth -- gifted and talented programs.* Notwithstanding the calculation in subsection 3, the department of management shall calculate the regular program allowable growth for the budget year beginning July 1, 1999, by multiplying the state percent of growth for the budget year by the regular program state cost per pupil for the base year, and add to the resulting product thirty-eight dollars. For purposes of determining the amount of a budget adjustment as defined in section 257.14, for a school district which calculated allowable growth for

the budget year beginning July 1, 1999, pursuant to this subsection, thirty-eight dollars shall be subtracted from the school district's regular program cost per pupil for the budget year beginning July 1, 1999, prior to determining the amount of the adjustment.

5. *Alternate allowable growth -- regular program state cost.* A school district which calculated allowable growth for the budget year beginning July 1, 1999, pursuant to the provisions of subsection 4, shall calculate allowable growth pursuant to the provisions of subsection 3 for the school budget year beginning July 1, 2000, and succeeding budget years, utilizing a regular program state cost per pupil figure which incorporates the thirty-eight dollar increase in regular program allowable growth calculated for the budget year beginning July 1, 1999.

6. *Combined allowable growth.* The combined allowable growth per pupil for each school district is the sum of the regular program allowable growth per pupil and the special education support services allowable growth per pupil for the budget year, which may be modified as follows:

a. By the school budget review committee under section 257.31.

b. By the department of management under section 257.36.

7. *Alternate allowable growth -- definitions.* For budget years beginning July 1, 2000, and subsequent budget years, references to the terms *"allowable growth"*, *"regular program state cost per pupil"*, and *"regular program district cost per pupil"* shall mean those terms as calculated for those school districts that calculated regular program allowable growth for the school budget year beginning July 1, 1999, with the additional thirty-eight dollars.

Section History: Recent Form

89 Acts, ch 135, § 8; 92 Acts, ch 1227, §15; 95 Acts, ch 11, §1; 96 Acts, ch 1001, §1; 98 Acts, ch 1005, § 1, 2; 99 Acts, ch 1, §1, 2; 99 Acts, ch 178, §2, 10; 2000 Acts, ch 1001, §1, 2; 2001 Acts, ch 2, §1, 2; 2002 Acts, ch 1159, §1, 2; 2002 Acts, ch 1167, §1, 6; 2003 Acts, ch 1, §1, 2; 2004 Acts, ch 1175, §234, 287; 2005 Acts, ch 1, §1, 2; 2006 Acts, ch 1154, §1, 2; 2007 Acts, ch 3, §1, 2; 2008 Acts, ch 1002, §1, 2; 2008 Acts, ch 1181, §96; 2009 Acts, ch 5, §1, 2; 2009 Acts, ch 6, §1, 2

Referred to in § 257.2, 257.9, 257.41, 273.23

Footnotes

2009 amendments to subsections 1 and 2 are applicable for computing state aid under the state school foundation program for the school budget year beginning July 1, 2010; 2009 Acts, ch 5, §2; 2009 Acts, ch 6, §2

257.9 STATE COST PER PUPIL.

1. *Regular program state cost per pupil for 1991-1992.*

a. For the budget year beginning July 1, 1991, for the regular program state cost per pupil, the department of management shall add together the sum of the products of each district's regular program district cost per pupil for the base year, as regular program

district cost per pupil would have been calculated under section 442.9, Code 1989, multiplied by its budget enrollment as budget enrollment would have been calculated under section 442.4, Code 1989, for the base year, plus the sum of the amounts added to the district cost of school districts pursuant to section 442.21, Code 1989.

b. The total calculated under this subsection shall be divided by the total of the budget enrollments of all school districts for the budget year beginning July 1, 1990, calculated under section 257.6, subsection 4, if section 257.6, subsection 4, had been in effect for that budget year. The regular program state cost per pupil for the budget year beginning July 1, 1991, is the amount calculated by the department of management under this subsection plus an allowable growth amount that is equal to the state percent of growth for the budget year multiplied by the amount calculated by the department of management under this subsection.

2. *Regular program state cost per pupil for 1992-1993 and succeeding years.* For the budget year beginning July 1, 1992, and succeeding budget years, the regular program state cost per pupil for a budget year is the regular program state cost per pupil for the base year plus the regular program allowable growth for the budget year.

3. *Special education support services state cost per pupil for 1991-1992.* For the budget year beginning July 1, 1991, for the special education support services state cost per pupil, the department of management shall divide the total of the approved budgets of the area education agencies for special education support services for that year approved by the state board of education under section 273.3, subsection 12, by the total of the weighted enrollment for special education support services in the state for the budget year. The special education support services state cost per pupil for the budget year is the amount calculated by the department of management under this subsection.

4. *Special education support services state cost per pupil for 1992-1993 and succeeding years.* For the budget year beginning July 1, 1992, and succeeding budget years, the special education support services state cost per pupil for the budget year is the special education support services state cost per pupil for the base year plus the special education support services allowable growth for the budget year.

5. *Combined state cost per pupil.* The combined state cost per pupil is the sum of the regular program state cost per pupil and the special education support services state cost per pupil.

6. *Teacher salary supplement state cost per pupil.* For the budget year beginning July 1, 2009, for the teacher salary supplement state cost per pupil, the department of management shall add together the teacher compensation allocation made to each district for the fiscal year beginning July 1, 2008, pursuant to section 284.13, subsection 1, paragraph *"h"*, Code 2009, and the phase II allocation made to each district for the fiscal year beginning July 1, 2008, pursuant to section 294A.9, Code 2009, and divide that sum by the statewide total budget enrollment for the fiscal year beginning July 1, 2009. The teacher salary supplement state cost per pupil for the budget year beginning July 1, 2010, and succeeding budget years, shall be the amount calculated by the department of management under this subsection for the base year plus an allowable growth amount that is equal to the teacher salary supplement categorical state percent of growth, pursuant to section 257.8,

subsection 2, for the budget year, multiplied by the amount calculated by the department of management under this subsection for the base year.

7. *Professional development supplement state cost per pupil.* For the budget year beginning July 1, 2009, for the professional development supplement state cost per pupil, the department of management shall add together the professional development allocation made to each district for the fiscal year beginning July 1, 2008, pursuant to section 284.13, subsection 1, paragraph *"d"*, Code 2009, and divide that sum by the statewide total budget enrollment for the fiscal year beginning July 1, 2009. The professional development supplement state cost per pupil for the budget year beginning July 1, 2010, and succeeding budget years, shall be the amount calculated by the department of management under this subsection for the base year plus an allowable growth amount that is equal to the professional development supplement categorical state percent of growth, pursuant to section 257.8, subsection 2, for the budget year, multiplied by the amount calculated by the department of management under this subsection for the base year.

8. *Early intervention supplement state cost per pupil.* For the budget year beginning July 1, 2009, for the early intervention supplement state cost per pupil, the department of management shall add together the early intervention allocation made to each district for the fiscal year beginning July 1, 2008, pursuant to section 256D.4,{ and divide that sum by the statewide total budget enrollment for the fiscal year beginning July 1, 2009. The early intervention supplement state cost per pupil for the budget year beginning July 1, 2010, and succeeding budget years, shall be the amount calculated by the department of management under this subsection for the base year plus an allowable growth amount that is equal to the early intervention supplement categorical state percent of growth, pursuant to section 257.8, subsection 2, for the budget year, multiplied by the amount calculated by the department of management under this subsection for the base year.

9. *Area education agency teacher salary supplement state cost per pupil.* For the budget year beginning July 1, 2009, for the area education agency teacher salary supplement state cost per pupil, the department of management shall add together the teacher compensation allocation made to each area education agency for the fiscal year beginning July 1, 2008, pursuant to section 284.13, subsection 1, paragraph *"i"*, Code 2009, and the phase II allocation made to each area education agency for the fiscal year beginning July 1, 2008, pursuant to section 294A.9, Code 2009, and divide that sum by the statewide special education support services weighted enrollment for the fiscal year beginning July 1, 2009. The area education agency teacher salary supplement state cost per pupil for the budget year beginning July 1, 2010, and succeeding budget years, shall be the amount calculated by the department of management under this subsection for the base year plus an allowable growth amount that is equal to the teacher salary supplement categorical state percent of growth, pursuant to section 257.8, subsection 2, for the budget year, multiplied by the amount calculated by the department of management under this subsection for the base year.

10. *Area education agency professional development supplement state cost per pupil.* For the budget year beginning July 1, 2009, for the area education agency professional development supplement state cost per pupil, the department of management shall add together

the professional development allocation made to each area education agency for the fiscal year beginning July 1, 2008, pursuant to section 284.13, subsection 1, paragraph *"d"*, Code 2009, and divide that sum by the statewide special education support services weighted enrollment for the fiscal year beginning July 1, 2009. The area education agency professional development supplement state cost per pupil for the budget year beginning July 1, 2010, and succeeding budget years, shall be the amount calculated by the department of management under this subsection for the base year plus an allowable growth amount that is equal to the professional development supplement categorical state percent of growth, pursuant to section 257.8, subsection 2, for the budget year, multiplied by the amount calculated by the department of management under this subsection for the base year.

Section History: Recent Form

89 Acts, ch 135, § 9; 90 Acts, ch 1190, § 3; 2008 Acts, ch 1181, §97; 2009 Acts, ch 68, §2; 2009 Acts, ch 177, §16
Referred to in § 257.2, 284.4

Footnotes

{The words "Code 2009" probably intended; corrective legislation is pending