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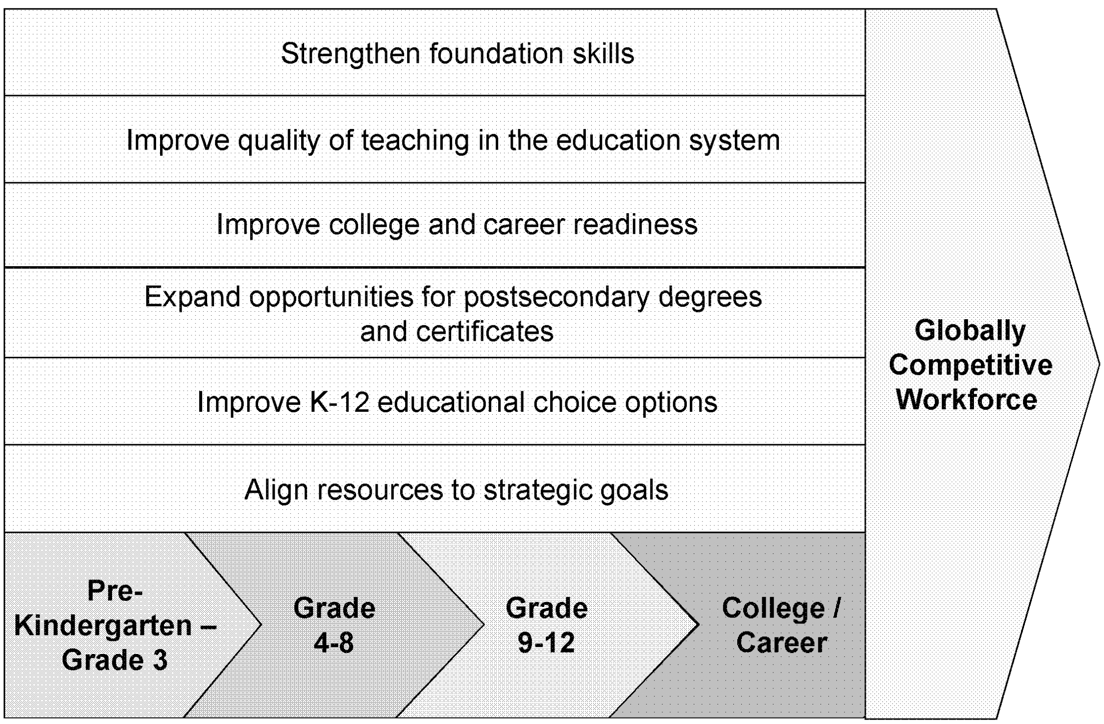
A1-1: Florida's Next Generation PreK-20 Education Strategic Plan

Adopted by the State Board of Education
November 2009



Mission (our purpose, function, value)

The mission of the State Board of Education *(S.1008.31, F.S.)* is to increase the proficiency of all students within one seamless, efficient system, by providing them with the opportunity to expand their knowledge and skills through learning opportunities and research valued by students, parents, and communities, and to maintain an accountability system that measures student progress toward the following goals:

- Highest student achievement
- Seamless articulation and maximum access
- Skilled workforce and economic development
- Quality efficient services

Next Generation PreK-20
Strategic Vision (what success looks like)

To change the culture of our schools from PreK to postsecondary by raising the ceiling and raising the floor to better enable students for success in the 21st century.

Next Generation PreK-20

Strategic Areas of Focus (our goals)

1. Strengthen foundation skills
2. Improve quality of teaching in the education system
3. Improve college and career readiness
4. Expand opportunities for postsecondary degrees and certificates
5. Improve K-12 educational choice options
6. Align resources to strategic goals

Next Generation PreK-20
Strategic Plan Crosswalk

Former Eight Strategic Imperatives	Next Generation Six Areas of Focus
2: Set, Align, and Apply Academic Curricular and Testing Standards 3: Improve Students Rates of Learning	1. Strengthen foundation skills
1: Increase the Supply of Highly Effective teachers 4: Improve Quality of Instructional Leadership	2. Improve quality of teaching in the education system
6: Align Workforce Education with Skill Requirements of the New Economy	3. Improve college and career readiness
8: Improve Student Opportunities for Access and Advancement	4. Expand opportunities for postsecondary degrees and certificates
5: Increase the Quantity and Improve the Quality of Education options	5. Improve K-12 educational choice options
7: Align Financial Resources with Performance	6. Align resources to strategic goals

Focus Area 1: Strengthen Foundation Skills Objectives: • To increase rigor of standards to improve student achievement in VPK–12 • Utilize assessment to direct instruction and effect student outcome • Develop strategies to assist schools in need of improvement	**Performance Measures**							
	Baseline 2007-2008	**FY09**	**FY10**	**FY11**	**FY12**	**FY13**	**FY14**	**FY15**
1.1 The percentage of students scoring at or above grade level on FCAT Reading and Math, by elementary, middle, and high school	Reading 70% Elementary 61% Middle 42% High Math 70% Elementary 60% Middle 67% High	**Reading** **72% Elementary** **62% Middle** **42% High** **Math** **72% Elementary** **61% Middle** **69% High**						
1.2 Graduation Rates • Excluding GED • Including GED	73.1% Exclude 75.4% Include							
1.3 Number of Correct II and Intervene schools showing significant progress each year	273 Correct II 12 Intervene	**670 Correct II** **15 Intervene**						
1.4 Percentage of K-3 students in special education due to reading deficits	11.7%							

Focus Area 1 (continued): Strengthen Foundation Skills Objectives: • To increase rigor of standards to improve student achievement in VPK–12 • Utilize assessment to direct instruction and effect student outcome • Develop strategies to assist schools in need of improvement	Performance Measures						
	Baseline 2007-2008	FY09	FY10	FY11	FY12	FY13	FY14	FY15
1.5. *Track cohorts of students who score "ready" on Kindergarten readiness assessment in Kindergarten and measure their performance on the third grade FCAT**								
1.6 *Track cohorts of students who score "not ready" on Kindergarten readiness assessment in Kindergarten and measure their performance on the third grade FCAT**								

** Future Measure*

Focus Area 2: Improve Quality of Teaching in the Education System Objectives: • Establish the state's expectations for quality instructional practice • Improve the quality of preparation programs, professional development, and certification exams • Align requirements for district performance appraisal to the state's expectations • Provide statewide recognition and award programs that reward outstanding performance based on the state's expectations (includes student achievement)	Performance Measures							
	Baseline 2007-2008	FY09	FY10	FY11	FY12	FY13	FY14	FY15
2.1 Number and percent of teachers receiving state performance pay	16.2% 37,948 Excluding School Recognition ** 46.3% 108,893 Including School Recognition ** 234,951 Total Teachers **							

** Updated with Final Survey 5 data

Focus Area 2 (continued): Improve Quality of Teaching in the Education System	Performance Measures							
	Baseline 2007-2008	FY09	FY10	FY11	FY12	FY13	FY14	FY15
Objectives: • Establish the state's expectations for quality instructional practice • Improve the quality of preparation programs, professional development, and certification exams • Align requirements for district performance appraisal to the state's expectations • Provide statewide recognition and award programs that reward outstanding performance based on the state's expectations (includes student achievement)								

2.2 Number and percentage of classes taught by out-of-field teachers in:
• All Schools
• Differentiated Accountability (DA) schools
• For critical teacher shortage areas:
  • Percentage of teachers teaching out-of-field
  • Number of completers from approved teacher preparation programs (SUS, CC, Educator Preparation Institute)
	All Schools:
	8.3%
	79,985 of 964,718 Total Classes
	DA:
	• Correct 1: 8.3%
	• Correct 2: 11.8%
	• Intervention: 10.1%
	• Prevent 1: 6.3%
	• Prevent 2: 15.1%
	Critical Teacher Shortage Areas:
	• Out-of-field: 8.9%
	• Completers (CC,SUS,EPI, Priv.): 1,961							

2.3 Number and percentage of new teachers who were math and science majors at a Florida Public College or University	Math 9.2% Science 41.8%**							

** *Updated with Final Survey 5 data*

Next Generation PreK-20
Benchmarks

Focus Area 3: Improve College and Career Readiness Objectives: • Increase number and percentage of students scoring "college ready" in math and language arts on approved postsecondary readiness assessment • Increase number and percentage of high school students graduating with industry certification or Ready to Work Credential • Increase student participation and performance in accelerated options of AP, IB, DE, and AICE • Define College and Career Readiness	Performance Measures							
	Baseline 2007-2008	FY09	FY10	FY11	FY12	FY13	FY14	FY15
3.1 The percentage of students scoring Level 4 and 5 on FCAT Reading and Math, in elementary, middle, and high school	Reading 36% Elementary 27% Middle 20% High Math 38% Elementary 28% Middle 36% High	**Reading** **39% Elementary** **28% Middle** **19% High** **Math** **40% Elementary** **28% Middle** **38% High**						
3.2 Number and percentage of ninth-grade students who enrolled in Algebra I prior to ninth grade	31.7% 64,693 of 204,139 Total Graduates **							
3.3 Number and percentage of high school graduates who enrolled in at least one accelerated course during their high school career (AP, IB, DE, or AICE)	50.9% 75,200 of 147,879 Total Graduates **							

*** Updated with Final Survey 5 data*
Updated November 2009

Next Generation PreK-20
Benchmarks

Focus Area 3 (continued): Improve College and Career Readiness Objectives: • Increase number and percentage of students scoring "college ready" in math and language arts on approved postsecondary readiness assessment • Increase number and percentage of high school students graduating with industry certification or Ready to Work Credential • Increase student participation and performance in accelerated options of AP, IB, DE, and AICE • Define College and Career Readiness	Performance Measures							
	Baseline 2007-2008	FY09	FY10	FY11	FY12	FY13	FY14	FY15
3.4 Number and percentage of students who enroll in accelerated courses that earned "postsecondary credit" in at least one accelerated course during their high school career (AP, IB, DE, or AICE)	61.8% 38,258 of 61,882 Graduates Who Enrolled in AP and/or DE ** 51.5% 38,626 of 75,074 Graduates Who Enrolled in AP or IB or DE							
3.5 *Number and percentage of students passing End-of-Course Exams* *								
3.6 Number and percentage of students enrolled in community college the year following high school graduation meeting approved postsecondary readiness standard via assessment in: • Math • Reading • Writing • In all 3 subjects	Math: 55.9% 27,430 of 49,110 Reading: 67.7% 33,691 of 49,778 Writing: 73% 36,333 of 49,778 All 3: 45.8% 22,467 of 49,027							

* Future Measure

Next Generation PreK-20

Benchmarks

Focus Area 3 (continued): Improve College and Career Readiness Objectives: • Increase number and percentage of students scoring "college ready" in math and language arts on approved postsecondary readiness assessment • Increase number and percentage of high school students graduating with industry certification or Ready to Work Credential • Increase student participation and performance in accelerated options of AP, IB, DE, and AICE • Define College and Career Readiness	Performance Measures							
	Baseline 2007-2008	FY09	FY10	FY11	FY12	FY13	FY14	FY15
3.7 *Number and percentage of students passing postsecondary readiness courses while in high school, adult high school, or GED programs **								
3.8 *Number and percentage of high school students graduating with the following *:* • *Industry Certification* • *Ready to Work Credential*								

* Future Measure

Next Generation PreK-20
Benchmarks

Focus Area 4: Expand Opportunities for Post-secondary Degrees and Certificates	Performance Measures							
Objectives: • Increase postsecondary enrollment rate • Increase diversity and number of high school graduates who enroll in postsecondary education • Increase diversity and number and percentage of high school graduates who earn a certificate or a degree at a community college or career center • Increase diversity and number and percentage of community college or state university system students who enroll in and complete upper division program of study	Baseline 2007-2008	FY09	FY10	FY11	FY12	FY13	FY14	FY15
4.1 Number and percentage of students who enroll in CC, SUS, ICUF, out-of-state, or technical centers in the year following high school graduation (disaggregated data available)	67.2% 95,300 of 141,882 Total Graduates **							
4.2 Of the students who enrolled in postsecondary following high school graduation, number and percentage of students who remain enrolled or exit with a credential after two and six years (disaggregated data available)	2 Years: CC: 81.2% 41,048 Enrolled Tech Ctr: 59.9% 1,531 Enrolled ** 6 Years: 47.5% 30,150 of 63,500 **							

*** Updated with Final Survey 5 data*

Next Generation PreK-20
Benchmarks

Focus Area 4 (continued): Expand Opportunities for Post-secondary Degrees and Certificates	Performance Measures							
Objectives: • Increase postsecondary enrollment rate • Increase diversity and number of high school graduates who enroll in postsecondary education • Increase diversity and number and percentage of high school graduates who earn a certificate or a degree at a community college or career center • Increase diversity and number and percentage of community college or state university system students who enroll in and complete upper division program of study	Baseline 2007-2008	FY09	FY10	FY11	FY12	FY13	FY14	FY15
4.3 The number and percentage of Associates' degree completers at a community college who transfer within two years to the upper division at a community college or university	1 Year: 56.6% 18,542 2 Years: 60.2% 19,465							
4.4 Trends in student enrollment in and completion of certificate and two year degree programs at community colleges	390,997 Enrollment 72,063 Completions							

Focus Area 4 (continued): Expand Opportunities for Post-secondary Degrees and Certificates Objectives: • Increase postsecondary enrollment rate • Increase diversity and number of high school graduates who enroll in postsecondary education • Increase diversity and number and percentage of high school graduates who earn a certificate or a degree at a community college or career center • Increase diversity and number and percentage of community college or state university system students who enroll in and complete upper division program of study	Performance Measures							
	Baseline 2007-2008	FY09	FY10	FY11	FY12	FY13	FY14	FY15
4.5 *Number and percentage of students who use an industry certification articulation pathway to enroll in a postsecondary program in the career area for which they were certified* *								
4.6 *Number and percentage of students who use an industry certification articulation pathway who subsequently complete a postsecondary program in the career area for which they were certified* *								

* *Future Measure*

Next Generation PreK-20
Benchmarks

Focus Area 5: Improve K-12 educational choice options Objective: • Improve educational options for K-12 parents and improve student performance	Performance Measures							
	Baseline 2007-2008	FY09	FY10	FY11	FY12	FY13	FY14	FY15
5.1 Number and percentage of students (FTE) completing virtual education	.37% 9,686.52 of 2,631,277.10 Total Public School FTE							
5.2 The percentage of students attending a charter school scoring at or above grade level on FCAT Reading and Math, by elementary, middle, and high school	<u>Reading</u> 73% Elementary 66% Middle 40% High <u>Math</u> 70% Elementary 63% Middle 65% High	**<u>Reading</u>** **75% Elementary** **68% Middle** **38% High** **<u>Math</u>** **73% Elementary** **64% Middle** **64% High**						
5.3 Number and percentage of charter schools that earned an A or B	72.2% 156 of 216 Charter Schools							
5.4 *Number and percentage of high performing SES providers* *								
5.5 The percentage of students attending a charter school scoring level 4 and 5 on FCAT Reading and Math, by elementary, middle, and high school	<u>Reading</u> 38% Elementary 29% Middle 17% High <u>Math</u> 38% Elementary 28% Middle 32% High	**<u>Reading</u>** **41% Elementary** **31% Middle** **16% High** **<u>Math</u>** **41% Elementary** **29% Middle** **33% High**						

** Future Measure*

Next Generation PreK-20

Benchmarks

Focus Area 6:
Align Resources to Strategic Goals

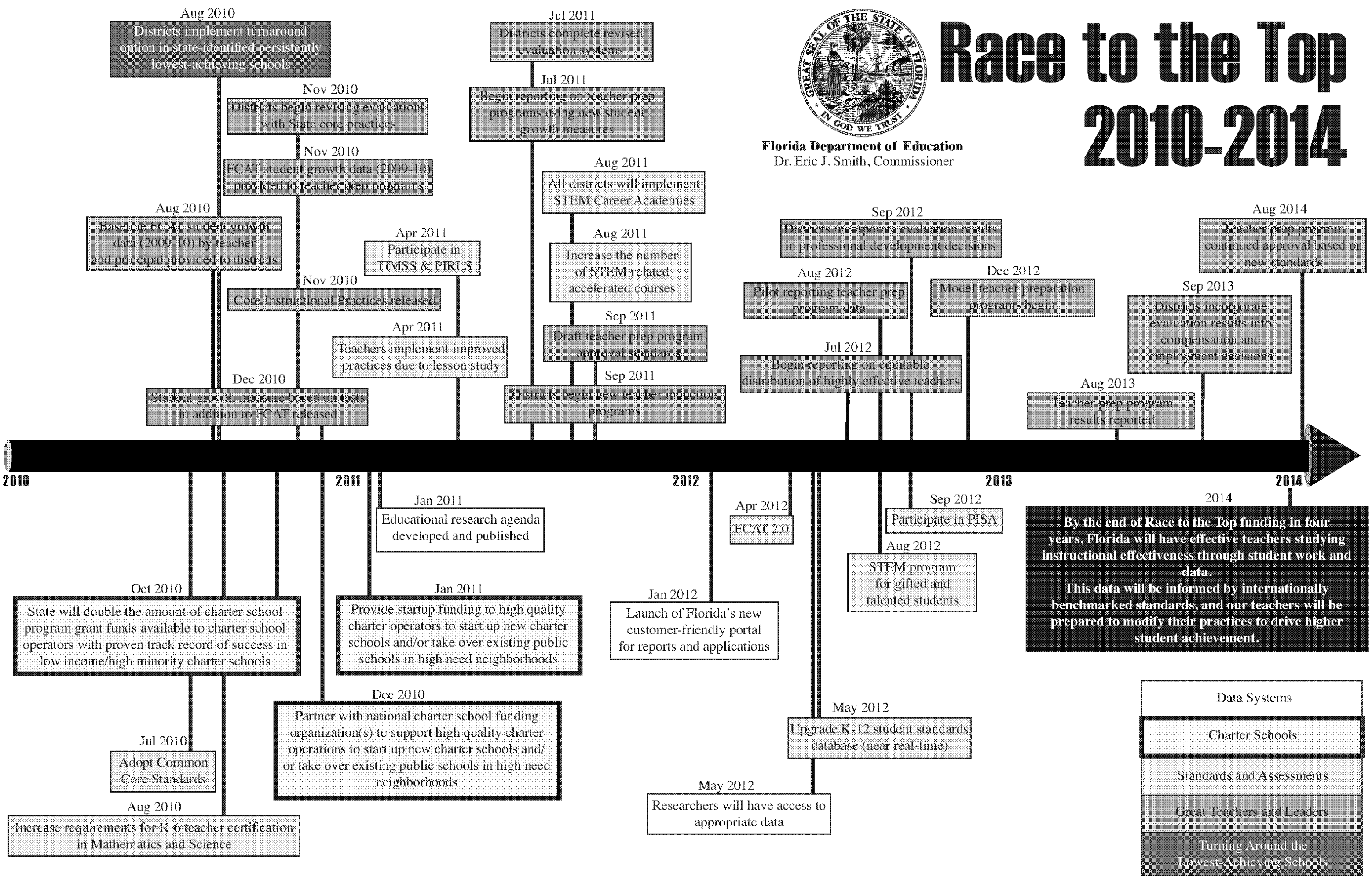
Objectives:

- Ensure funding and other resources are available to effectively and efficiently implement agency priorities

Next Generation PreK-20
Strategic Alignment

Focus Areas	2009-2010 Strategies
1. Strengthen foundation skills	1a) Update the Next Generation Sunshine State Standards / Common Core Standards 1b) Support struggling schools and districts 1c) Develop assessment systems to monitor student progress and provide information to improve instruction 1d) Reform and align the FCAT 1e) Enhance the full day Pre-Kindergarten Program for low income students 1f) Strengthen key grade transitions
2. Improve quality of teaching in the education system	2a) Strengthen the connection between teacher effectiveness and student performance 2b) Raise the standards for entry into the profession 2c) Maintain a highly effective workforce
3. Improve college and career readiness	3a) Improve the alignment of college readiness and remedial courses 3b) Update the Next Generation career and technical education standards 3c) Develop and implement end-of-course exams 3d) Provide greater emphasis on moving students to higher levels of proficiency 3e) Improve the alignment of high schools with college and career expectations
4. Expand opportunities for post-secondary degrees and certificates	4a) Improve postsecondary transitions from lower level to upper level 4b) Expand access to distance learning 4c) Develop Gold Standard Career Pathways 4d) Increase certificate and degree production
5. Improve K–12 educational choice options	5a) Strengthen the quality of school choice options 5b) Expand educational choice options
6. Align resources to meet strategic goals	6a) 2010–2011 Legislative Budget Request 6b) Alignment of 2009–2010 Federal Funds with Goals 6c) 2009–2010 Prioritization of Internal Operating Funds 6d) Management and Reporting of American Recovery and Reinvestment Act Funds 6e) Develop and Implement the Department Communication Plan 6f) Develop and Implement the State Technology Plan

A1-2: Florida's Race to the Top Timeline



STATE OF FLORIDA

OFFICE OF THE GOVERNOR
EXECUTIVE ORDER NUMBER 10-94

(Establishing Florida's Race to the Top Working Group)

WHEREAS, the United States Department of Education sponsored Race to the Top to provide $4.35 billion to states that will lead the way with ambitious yet achievable plans for implementing coherent, compelling, and comprehensive education reform; and

WHEREAS, the State of Florida was selected as one of 16 finalists for Phase I of the Race to the Top grant; and

WHEREAS, Florida was awarded the fourth highest number of points for its application in Phase I; and

WHEREAS, Phase I of the Race to the Top grant was awarded solely to the top two finalists; and

WHEREAS, the State of Florida intends to apply for Phase II of the Race to the Top grant, where $3.4 billion remain available to states; and

WHEREAS, the State seeks to foster broader stakeholder support for its Phase II application to enhance Florida's success; and

WHEREAS, the Race to the Top grant requires a Memorandum of Understanding to support the grant application; and

WHEREAS, broad stakeholder support requires a collaborative, open, and transparent review of the State's Memorandum of Understanding; and

WHEREAS, stakeholder support will be furthered by an understanding of the potential benefits to and responsibilities of Florida's Phase II application.

NOW, THEREFORE, I, CHARLIE CRIST, as Governor of Florida, by virtue of the authority vested in me by the laws and Constitution of the State of Florida, issue the following Executive Order, effective immediately:

Section 1.

Florida's Race to the Top Working Group (the "Working Group") is hereby created to facilitate stakeholder participation in the review of the State's Memorandum of Understanding. The Working Group shall continue in existence until its objectives are achieved, but no later than June 1, 2010, unless extended by further executive order.

Section 2.

The responsibilities of the Working Group shall include the following:

a. Reviewing the current Memorandum of Understanding and comparing the Memorandum with the objectives of the competition.

b. Identifying and discussing issues relevant to the Memorandum of Understanding.

c. Collaborating in a transparent manner to gather input on the benefits to and responsibilities of the various parties resulting from agreements made in the Memorandum of Understanding.

d. Recommending revisions to the final draft of the Memorandum of Understanding to position Florida in the strongest position possible if the Working Group determines revisions to the Memorandum of Understanding would assist in furthering the award of the grant.

Section 3.

The Working Group shall, no later than April 30, 2010, provide recommendations on the Race to the Top Phase II application to the Governor, the State Board of Education and the Department of Education.

Section 4.

The Working Group will consist of members appointed by the Governor. Members shall serve a term that commences on the day of the appointment. Members shall serve at the pleasure of the Governor, and the Governor may fill any vacancy that occurs. Membership of the Working Group shall include the following:

a. Alberto Carvalho, Superintendent, Miami-Dade County Public Schools

b. Kim Black, President, Pinellas Classroom Teachers Association

c. Karin Brown, President, Florida Parent Teacher Association

d. Mark Wilson, President and CEO, Florida Chamber of Commerce

e. Andy Ford, President, Florida Education Association

f. Debra Dowds, Executive Director, Florida Developmental Disabilities Council

g. Ronald Blocker, Superintendent, Orange County Public Schools

h. Megan Allen, 2010 Florida Teacher of the Year, Hillsborough County

i. W.C. Gentry, Duval County School Board

j. Candace Lankford, Volusia County School Board and President, Florida School Boards Association

k. Senator Rudy Garcia, District 40

l. Representative Jimmy Patronis, District 6

Section 5.

Superintendent Alberto Carvalho, Miami-Dade County Public Schools, shall serve as the Chair of the Working Group. The Commissioner of Education shall serve as an ex officio, nonvoting member. The Department of Education shall provide administrative support to the Working Group, and the Working Group is authorized to call upon any state agency, department, division or office to supply such data, reports or other information as it deems reasonably necessary to achieve its objectives.

Section 6.

Members of the Working Group shall serve without compensation; however, to the extent allowed by Chapter 112, Florida Statutes, members from public entities may be reimbursed for travel expenses at the discretion of their respective employers.

Section 7.

The meetings of the Working Group shall be noticed and open to the public.

IN TESTIMONY WHEREOF, I have hereunto set my hand and have caused the Great Seal of the State of Florida to be affixed at Tallahassee, this 21 day of April, 2010.

GOVERNOR

ATTEST:

SECRETARY OF STATE

FILED
2010 APR 21 PM 6:37
TALLAHASSEE, FLORIDA

PARTICIPATING LOCAL EDUCATION AGENCY (LEA)

MEMORANDUM OF UNDERSTANDING (MOU)

I. PURPOSE AND SCOPE OF WORK: An award of Race to the Top grant funds would position Florida to weave a common core of rigorous standards and assessments into a pioneering data system that will serve as a foundation to attract, retain, and support top notch teachers and school leaders who will, in turn, improve student achievement in Florida's schools. By entering into this "Memorandum of Understanding" ("MOU"), Local Education Agencies ("LEAs") will indicate their commitment to these principles and their ability to ensure that these principles are implemented through their LEA plan.

This MOU is entered into by and between the Florida 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 which portions of the State's proposed reform plans ("State Plan") the Participating LEA is agreeing to implement should the State's application be approved by the United States Department of Education ("ED").

In order to participate, the LEA must agree to implement all applicable portions of the State Plan and return the executed MOU on or before May 25, 2010, to Holly.Edenfield@fldoe.org.

Nothing herein should be construed to obviate the responsibility of an LEA to comply with class size requirements.

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 U.S. Department of Education and if the LEA is approved for a subgrant by the Department. Approval of the subgrant will be based upon the scope and quality of the LEA's proposed work plans and its capacity to implement the plans. To this end, the Participating LEA sub grantee 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 ED.

3) Post to any website specified by the Department or ED, in a timely manner, all non-proprietary products and lessons developed using funds associated with the Race to the Top grant.

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

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

6) Participate in meetings and telephone conferences with the Department to discuss (a) progress of the project, (b) potential dissemination of resulting non-proprietary products and lessons 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) Identify sources of technical assistance for the project.

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 and status reports 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. COLLECTIVE BARGAINING RESPONSIBILITIES: The parties to any applicable collective bargaining agreement will use their best efforts to negotiate any terms and conditions in the agreement necessary for the full implementation of the State Plan. The parties understand that the failure to negotiate any term or condition in a collective bargaining agreement necessary for full implementation of the State Plan will result in termination of the grant.

Only the elements of this MOU which are contained in existing law are subject to the provisions of section 447.403, Florida Statutes.

E. DEPARTMENT RECOURSE FOR LEA NON-PERFORMANCE: If the Department determines that the LEA is not meeting its goals, timelines, budget, or annual targets or is not fulfilling other applicable requirements, the Department grantee will take appropriate enforcement action, which could include a collaborative process between the Department and the LEA, or any of the enforcement measures that are detailed in 34 CFR section 80.43 including putting the LEA on reimbursement payment status, temporarily withholding funds, or disallowing costs.

III. ASSURANCES: The Participating LEA hereby certifies and represents that it:

1) Has all requisite power and authority to execute this MOU.

2) Is familiar with 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.

3) 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.

4) 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 Florida, should the State be awarded the grant.

5) Will propose a comprehensive, interconnected plan that will drive continuous improvement of students, teachers, and principals based upon specific goals and benchmarks. This comprehensive LEA plan will align all federal, state, and local resources and support systems, as appropriate, to maximize the LEA's capacity to implement the plan.

6) Will comply with all of the terms of the Grant, the Department's sub grant, 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).

IV. DEFINITIONS: The definitions found in the Race to the Top Application for Initial Funding apply to this MOU. In addition:

1) “High-minority school” means a school with a minority population that is within the top quartile of minority student membership in the state.

2) “High-poverty school” means a school in the top quartile as measured by the percentage of students receiving free and reduced lunch.

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

VI. DURATION/TERMINATION: This Memorandum of Understanding 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.

VII. INABILITY TO IMPLEMENT: The parties acknowledge that certain LEA undertakings in the MOU are subject to school board consideration and action at a duly noticed public meeting in accordance with Section 120.525, Florida Statutes. The parties further agree that if the LEA is unable to implement any of the mandatory terms of the MOU despite its good faith efforts to do so, resulting in termination of this MOU, such termination shall be without prejudice to the LEA. The LEA has not received the full State Plan, which is not yet complete. In executing this MOU and making the representations and warranties herein contained, the LEA is relying on the materials and representations provided to date by the Department with the understanding that the State Plan, once complete, will not be materially inconsistent with such materials and representations.

VIII. GOVERNOR’S TASK FORCE: The parties hereby recommend to the Governor, the creation of a task force to monitor the implementation of the grant and the Memorandum of Understanding. Such a task force should be made up of similar stakeholders represented in Florida’s Race to the Top Working Group, established by Executive Order 10-94, and should hold its initial meeting thirty days after Florida receives notification that is has been awarded its grant. The parties recommend such task force operate as an advisory body regarding assessments and make advisory recommendations to the Governor, the local education agencies, and the State Board of Education relating to implementing the Race to the Top Grant. Additionally, the task force could make recommendations for legislation. The parties further recommend the task force be required to issue its first report by January 1, 2011, and submit quarterly reports thereafter to the Governor, the State Board of Education, the President of the Senate and the Speaker of the House of Representatives.

VIII. SIGNATURES

Superintendent for the LEA:

____

Signature/Date

____

Print Name/Title

Chair of School Board for the LEA:

____

Signature/Date

____

Print Name/Title

Authorized Representative of Local Teachers' Union:

____

Signature/Date

____

Print Name/Title

Commissioner of Education:

____

Signature/Date

____

Print Name/Title

EXHIBIT I – PRELIMINARY SCOPE OF WORK

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

Elements of State Reform Plans	Comments from LEA (optional)
Through Race to the Top, the Department is poised to weave a common core of rigorous standards and assessments into a pioneering data system that will serve as a foundation to attract, retain, and support top notch teachers and school leaders who will, in turn, improve student achievement in our schools.	
B. Standards and Assessments	
(B)(3) Supporting the transition to enhanced standards and high-quality assessments • Persistently lowest-achieving schools (schools in the lowest 5%) must modify the school schedules to accommodate lesson study. The LEA may modify school schedules for other schools to allow for common planning time by grade level (elementary) or subject area (secondary). Such planning time may be dedicated to lesson study focused on instructional quality, student work, and outcomes, without reducing time devoted to student instruction. Where lesson study is implemented, the LEA will devote a minimum of one lesson study per month for each grade level or subject area. • The LEA will ensure that professional development programs in all schools focus on the new common core standards, including assisting students with learning challenges to meet those standards (such as through accommodations and assistive technology). Such professional development will employ formative assessment and the principles of lesson study. • The LEA will implement a system to evaluate the fidelity of lesson study and formative assessment implementation that is tied to interim and summative student assessments. • The LEA will implement at least one additional high school career and technical program that provides training for occupations requiring science, technology, engineering, and/or math (STEM). The LEA will pay, or secure payment for the industry certification examination for graduates of such programs. These programs must lead to a high-wage, high-skill career for a majority of graduates that supports one of the eight targeted sectors identified	

Elements of State Reform Plans	Comments from LEA (optional)
by Enterprise Florida and result in an industry certification. The LEA will ensure that these programs will include at least one Career and Technical Education course that has significant integration of math or science that will satisfy core credit requirements with the passing of the course and related end-of-course exam. • The LEA will increase the number of STEM-related accelerated courses, such as Advanced Placement, International Baccalaureate, AICE, dual enrollment, and industry certification. • The LEA will ensure that each school possesses the technology, including hardware, connectivity, and other necessary infrastructure, to provide teachers and students sufficient access to strategic tools for improved classroom instruction and computer-based assessment.	
C. Data Systems to Support Instruction	
<u>(C)(2) Accessing and using State data</u> • The LEA will assist in the design, testing, and implementation of initiatives to improve customer-friendly access and information to district leaders, teachers, principals, parents, students, community members, unions, researchers, and policymakers to effectively use state data systems. Examples of areas where the LEA will be required to assist the Department include providing assistance on defining state-level educational data that can be used to augment local data systems, implementing a single sign-on to access state resources, providing data to the Department, and testing other mechanisms that will enhance the usability of existing state-level applications to improve instruction and student learning. • The LEA will use state-level data that is published for use, along with local instructional improvement systems, to improve instruction.	
<u>(C)(3) Using data to improve instruction:</u> <u>(i) Use of local instructional improvement systems</u> • The LEA will use customer-friendly front end systems that are easy for students, teachers, parents, and principals	

Elements of State Reform Plans	Comments from LEA (optional)
to use and that show growth of students, teachers, schools, and districts disaggregated by subject and demographics. • An LEA that has an instructional improvement system will ensure that the system is being fully utilized; an LEA that does not have an instructional improvement system will acquire one.	
(ii) Professional development on use of data • The LEA will provide effective professional development to teachers and administrators on the use of its instructional improvement system. • The LEA will provide effective professional development to teachers and administrators on the use of state level data systems developed during the term of the grant.	
(iii) Availability and accessibility of data to researchers • The LEA will provide requested data from local instructional improvement and longitudinal data systems to the Department to support the Department's efforts to make data available to researchers for the purpose of evaluating the effectiveness of instructional materials, strategies, and approaches for educating different types of students and to help drive educational decisions and policies.	
D. Great Teachers and Leaders	
(D)(1) Providing high-quality pathways for aspiring teachers and principals	
(ii) Alternative routes to certification that are in use • The LEA will coordinate with institution preparation programs to provide effective district personnel to supervise pre-service teacher and educational leadership candidates. Such district supervising personnel will be highly effective teachers. • The LEA will use data from student performance and other continued approval standards in Rule 6A-5.066, F.A.C., to annually review and improve its alternative certification program and will deliver any professional	

Elements of State Reform Plans	Comments from LEA (optional)
development associated with the program in accordance with the state's protocol standards for professional development.	
<u>(D)(2) Improving teacher and principal effectiveness based on performance</u>	
<u>(i) Measure student growth</u> The LEA will measure student growth based upon the performance of students on state-required assessments and, for content areas and grade levels not assessed on state-required assessments, the LEA will use state assessments or district-selected assessments that are aligned to state standards and developed or selected in collaboration with LEA stakeholders, or will use valid, rigorous national assessments. The Department will collaborate with an advisory body representing all stakeholders to develop a fair and transparent student growth model that takes into consideration unique student characteristics, challenges, and other factors that affect student performance.	
<u>(ii) Design and implement evaluation systems</u> • The LEA will design and implement a teacher evaluation system with teacher and principal involvement that: 1. Utilizes the state-adopted teacher-level student growth measure cited in (D)(2)(i) as the primary factor of the teacher and principal evaluation systems. Student achievement or growth data as defined in the grant must account for at least 50% of the teacher's evaluation as follows: By the end of the grant, the LEA shall include student growth as defined in (D)(2)(i), for at least 40% of the evaluation, and student growth or achievement as determined by the LEA for 10% of the evaluation. The LEA may phase-in the evaluation system but will use, at a minimum, student growth as defined in (D)(2)(i) for at least 35% of the evaluation and student growth or achievement as determined by the LEA for	

Elements of State Reform Plans	Comments from LEA (optional)
15% of the evaluation. Implementation of the requirements for the LEA evaluation systems beginning in the 2011-12 school years applies, at a minimum, to teachers in grades and subjects for which student growth measures have been developed by the Department in collaboration with the advisory body as described in (D)(2)(i). The 2010-11 school year will be considered a development year for the evaluation systems. However, an LEA that completed renegotiation of its collective bargaining agreement between July 1, 2009, and December 1, 2009, for the purpose of determining a weight for student growth as the primary component of its teacher and principal evaluations, is eligible for this grant as long as the student growth component is at least 40% and is greater than any other single component of the evaluation. 2. Includes the core of effective practices, developed in collaboration with stakeholders, that have been strongly linked to increased student achievement for the observation portion of the teacher evaluation. The principal, direct supervisor, and any other individual performing observation will use, at a minimum, this same core of effective practices. 3. Includes at least one additional metric to combine with the student performance and principal observation components to develop a "multi-metric" evaluation system for, at a minimum, the teachers who are in the year prior to a milestone career event, such as being awarded a multi-year contract, a promotion, or a significant increase in salary. Examples of additional metrics include, but are not limited to, observations by master teachers or instructional coaches, student input, peer input, and parental input. 4. Includes a comprehensive range of ratings beyond a simple satisfactory or unsatisfactory, that must include "effective" and "highly effective." • The LEA will design and implement a principal evaluation system with teacher and principal involvement that:	

Elements of State Reform Plans	Comments from LEA (optional)
1. Utilizes the state-adopted teacher-level student growth measure cited in (D)(2)(i) as the primary factor of the teacher and principal evaluation systems. Student achievement or growth data as defined in the grant must account for at least 50% of the principal's evaluation as follows: By the end of the grant, the LEA shall include student growth as defined in (D)(2)(i), for at least 40% of the evaluation, and student growth or achievement as determined by the LEA for 10% of the evaluation. The LEA may phase-in the evaluation system but will use, at a minimum, student growth as defined in (D)(2)(i) for at least 35% of the evaluation and student growth or achievement as determined by the LEA for 15% of the evaluation. Implementation of the requirements for the LEA evaluation systems applies, at a minimum, to grades and subjects for which student growth measures have been developed by the Department in collaboration with the advisory body as described in (D)(2)(i). The 2010-11 school year will be considered a development year for the evaluation systems. 2. Utilizes for the remaining portion of the evaluation the Florida Principal Leadership Standards with an emphasis on recruiting and retaining effective teachers, improving effectiveness of teachers, and removing ineffective teachers. 3. Includes a comprehensive range of ratings beyond a simple satisfactory or unsatisfactory, that must include "effective" and "highly effective." • The LEA will submit teacher and principal evaluation systems to the Department for review and approval. • The LEA will utilize student performance data on statewide assessments as a significant factor in the annual evaluations of district-level staff with supervisory responsibilities over principals, curriculum, instruction, or any other position directly related to student learning.	

Elements of State Reform Plans	Comments from LEA (optional)
• The LEA will report the results of evaluations of each teacher, principal, and district-level supervisor [as described in (D)(2)(ii)] to the Department during Survey 5.	
<u>(iii) Conduct annual evaluations</u> **For Teachers:** • The LEA will conduct multiple evaluations for each first-year teacher that are integrated with the district's beginning teacher support program and include observations on the core effective practices described in (D)(2)(ii)2. and reviews of student performance data. • The LEA will conduct "multi-metric" evaluations as described in (D)(2)(ii) for teachers who are in the year prior to a milestone career event, such as being awarded a multi-year contract, a promotion, or a significant increase in salary. The LEA plan will include a definition of milestone career event. • The LEA will conduct evaluations as described in (D)(2)(ii)1, 2, and 4. for all other teachers at least once per year. **For Principals:** • The LEA will conduct evaluations as described in (D)(2)(ii) for principals at least once per year.	
<u>(iv)(a) Use evaluations to inform professional development.</u> The LEA will use results from teacher and principal evaluations as described in (D)(2)(ii) in its professional development system as follows: **For Teachers:** • Establish an Individual Professional Development Plan (IPDP) for each teacher that is, in part, based on an analysis of student performance data and results of prior evaluations.	

Elements of State Reform Plans	Comments from LEA (optional)
• Individualize the support and training provided to first-and second-year teachers and determine the effective teachers who will provide coaching/mentoring in the district's beginning teacher support program. **For Principals:** • Establish an Individual Leadership Development Plan (ILDP) for each principal that is based, in part, on an analysis of student performance data and results of prior evaluations.	
<u>(iv)(b) Use evaluations to inform compensation, promotion, and retention</u> • The LEA will implement a compensation system for teachers that: 1. Ties the most significant gains in salary to effectiveness demonstrated by annual evaluations as described in (D)(2)(ii). 2. Implements statutory requirements of differentiated pay in s. 1012.22(1)(c)4., F.S., through bonuses or salary supplements. Categories for differentiated pay are additional academic responsibilities, school demographics, critical shortage areas (including STEM areas and Exceptional Student Education), and level of job performance difficulties (including working in high-poverty, high-minority, or persistently lowest-achieving schools). 3. Provides promotional opportunities for effective teachers to remain teaching in addition to moving into school leadership positions and bases promotions on effectiveness as demonstrated on annual evaluations as described in (D)(2)(ii), including a multi-metric evaluation in the year prior to promotion. • The LEA will implement a compensation system for principals that: 1. Ties the most significant gains in salary to effectiveness demonstrated by annual evaluations as	

Elements of State Reform Plans	Comments from LEA (optional)
described in (D)(2)(ii). 2. Implements statutory requirements of differentiated pay in s. 1012.22(1)(c)4., F.S., through bonuses or salary supplements. Categories for differentiated pay are additional academic responsibilities, school demographics, critical shortage areas, and level of job performance difficulties (including working in high-poverty, high-minority, or persistently lowest-achieving schools). • The LEA may scale up the compensation system beginning with a cohort of schools, such as those that are considered persistently low-performing (the lowest 5% of schools in the state), as long as by the end of the grant, the compensation system applies district-wide. • The LEA will provide annually to the Department its salary schedule indicating how this requirement has been met.	
<u>(iv)(c) Use evaluations to inform tenure and/or full certification</u> • The LEA will base decisions to award employment contracts to teachers and principals on effectiveness as demonstrated through annual evaluations as described in (D)(2)(ii).	
<u>(iv)(d) Use evaluations to inform removal</u> • The LEA will base decisions surrounding reductions in staff, including teachers and principals holding employment contracts, on their level of effectiveness demonstrated on annual evaluations as described in (D)(2)(ii). When this factor yields equal results, seniority and other factors may be used in decisions. • The LEA will hold principals, their supervisors, and all LEA staff who have a responsibility in the dismissal process accountable for utilizing the process and timeline in statute (ss. 1012.33 and 1012.34, F.S.) to remove ineffective teachers from the classroom.	

Elements of State Reform Plans	Comments from LEA (optional)
• The LEA will report annually to the Department through Survey 5 the teachers and principals who were dismissed for ineffective performance as demonstrated through the district's evaluation system. • The LEA will report annually to the Department through Survey 5 the highly effective teachers and principals who have resigned or who are no longer employed by the District.	
<u>(D)(3) Ensuring equitable distribution of effective teachers and principals:</u>	
<u>(i) High-poverty and/or high-minority schools</u> • The LEA will develop a plan, with timetables and goals, that uses effectiveness data from annual evaluations as described in (D)(2)(ii) to attract and retain highly effective teachers and principals to schools that are high-poverty, high-minority, and persistently lowest-achieving. The LEA plan may also be designed to attract and retain new teachers from high performing teacher preparation programs as defined by the Department in the grant to these schools. • The LEA will implement a compensation system as described in (D)(2)(iv)(b) to provide incentives for encouraging effective teachers and principals to work in these schools. • The LEA will present a plan that includes strategies in addition to compensation to staff these schools with a team of highly effective teachers led by a highly effective principal, including how the success of these individuals will be supported by the district. • The LEA will report the effectiveness data of all teachers and principals annually during Survey 5.	
<u>(ii) Hard-to-staff subjects and specialty areas</u> • The LEA will implement a compensation system as described in (D)(2)(iv)(b) to provide incentives for the	

Elements of State Reform Plans	Comments from LEA (optional)
recruitment of effective teachers in these subjects and areas. • The LEA will implement recruitment and professional development strategies to increase the pool of teachers available in the district in these subject areas.	
(D)(5) Providing effective support to teachers and principals:	
(i) Quality professional development • The LEA will implement a district professional development system that utilizes the state's protocol standards for effective professional development as follows: **For Teachers:** • Persistently lowest-achieving schools (schools in the lowest 5%) must modify the school schedules to accommodate lesson study. The LEA may modify school schedules for other schools to allow for common planning time by grade level (elementary) or subject area (secondary). Such planning time may be dedicated to lesson study focused on instructional quality, student work, and outcomes, without reducing time devoted to student instruction. Where lesson study is implemented, the LEA will devote a minimum of one lesson study per month for each grade level or subject area. • The LEA will ensure that professional development programs in all schools focus on the new common core standards, including assisting students with learning challenges to meet those standards (such as through accommodations and assistive technology). Such professional development will employ formative assessment and the principles of lesson study. • The LEA will implement IPDPs for teachers based on analysis of student performance data and results of prior evaluations as described in (D)(2)(ii). • The LEA will implement a beginning teacher support program for teachers in the first and second year that	

Elements of State Reform Plans	Comments from LEA (optional)
integrates data from multiple evaluations, coaching/mentoring, and assistance on using student data to improve instruction; builds in time for observation of effective teachers; includes collaboration with colleges of education, as appropriate; and defines a clear process for selecting and training coaches/mentors. **For Principals:** • The LEA will implement professional development programs at all schools that focus on the new common standards, including assisting students with learning challenges to meet those standards. • The LEA will implement professional development based on the principles of lesson study and formative assessment as described by the Department in this grant and the process needed to implement lesson study in a school. • The LEA will implement ILDPs for principals based on analysis of student performance data and results of prior evaluations as described in (D)(2)(ii).	
(ii) Measure effectiveness of professional development • The LEA will evaluate professional development based on student results and changes in classroom/leadership practice (as appropriate for the teacher/principal).	
Toward the absolute priority of comprehensive education reform: • The LEA will document the use of Title II A funds specifically to supplement and enhance the initiatives implemented in this grant, including documentation in the district's budget for the first year and each subsequent year of the grant.	
E. Turning Around the Lowest-Achieving Schools	
(E)(2) Turning around the lowest-achieving schools • The LEA will select and implement one of the four school intervention models described in the grant application in	

Elements of State Reform Plans	Comments from LEA (optional)
all persistently lowest-achieving schools located in the district (see Appendix A to the MOU). The Department will identify the schools based upon the school categories devised for school accountability under s. 1008.33, F.S., and set forth in proposed Rule 6A-1.099811, F.A.C. (see Appendices B and C to the MOU). • An LEA with more than nine persistently lowest-achieving schools will not select the transformational option for more than one-half of the schools. • All actions undertaken by the LEA under this element of the grant will be in accordance with the requirements of s. 1008.33, F.S. (Differentiated Accountability). • The LEA will submit a plan for the Department's approval that implements one or more of the following programs in each persistently lowest-achieving school and within the feeder pattern of each persistently lowest-achieving high school: 1. In Intervene schools, the LEA will implement a schedule that provides increased learning time beyond the minimum 180 days and/or implement an extended school day, beyond the current hours of instruction. 2. The LEA will offer prekindergarten on a full day basis using the Department's Title I Full Day PreK model, for children residing in the attendance zone of such schools. 3. The LEA will expand opportunities for students to attend career and professional academies, especially STEM academies, under s. 1003.493, F.S. 4. The LEA will expand or introduce proven programs to encourage advanced classes, positive behavior support systems, mentoring, and curriculum that provide high-need students with college-ready, career-ready, or other postsecondary skills. 5. The Department may approve other programs that demonstrate a strong record of improving student achievement in these district schools.	

Elements of State Reform Plans	Comments from LEA (optional)
• The LEA will use effectiveness data from annual evaluations to determine incentives for the most effective teachers to work in the district's elementary, middle, and high schools that are the persistently lowest-achieving. • The LEA will only assign new teachers (those in their first and second year) in the district's schools that are the persistently lowest-achieving if these teachers have completed or are participating in a high-performing teacher preparation program, as defined in the grant application. The LEA will ensure that such teachers are provided additional support by staffing a mix of new and proven teachers across all content areas and grade levels in the school.	
F. General	
(F)(2) Ensuring successful conditions for high-performing charter schools and other innovative schools • The LEA will offer charter schools located within their district the opportunity to participate in the grant on the same terms as any other district school. • Consistent with federal requirements, the LEA will ensure that participating charter schools receive a commensurate share of any grant funds and services funded by the grant. The LEA will provide data and reports necessary for the evaluation of the grant conducted by the Department's evaluation team and will require charter schools to provide the LEA with the data necessary for such evaluations.	

For the Participating LEA	For the Florida Department of Education
______________________________	______________________________
Authorized LEA Signature/Date	Authorized State Signature/Date
______________________________	______________________________
Print Name/Title	Print Name/Title

April 29, 2010

The Honorable Charlie Crist
Office of the Governor
State of Florida
PL-05 The Capitol
Tallahassee, FL 32399-0001

Dear Governor Crist,

On behalf of Florida's Race to the Top Working Group, I am pleased to inform you that we finished meeting yesterday and will be recommending revisions to the Race to the Top Phase II Memorandum of Understanding. Those collaborative recommendations are being finalized and will be sent to you shortly. I believe the recommended revisions to the Memorandum of Understanding will put Florida in a stronger position and will assist in furthering the award of the grant, thus fulfilling your charge to the Working Group.

One recommendation of the Working Group that I would like to bring to your attention is the request for you to establish a task force to monitor the implementation of the grant and the Memorandum of Understanding should Florida receive approval. Such a task force should be made up of similar stakeholders represented in the Working Group and should hold its initial meeting thirty days after Florida receives notification that it has been awarded the grant.

The Working Group believes the task force should operate as an advisory body regarding assessments and make advisory recommendations to you, the local education agencies, and the State Board of Education relating to implementing the Race to the Top Grant. Additionally, the task force could make recommendations for legislation. The Working Group recommends the task force be required to issue its first report by January 1, 2011, and submit quarterly reports thereafter to the Governor, the State Board of Education, the President of the Senate and the Speaker of the House of Representatives.

Given the success of the collaborative approach you championed in the Executive Order establishing the Working Group, we are hopeful you will approve the request. Thank you for the honor of serving as Chair of this productive and collaborative group.

Sincerely,

Alberto M. Carvalho, Chair
Florida's Race to the Top Working Group

AMC:cpi

cc: Florida's Race to the Top Working Group Members

A1-6: NAEP GOAL SUBGROUP DETAIL

NAEP Grade 4 Reading, % of Students Scoring At or Above Proficient				
	Baseline (2009)	2011	2013	State Goal (2015)
All Students	36%	38%	43%	50%
White 45%		47%	51%	56%
African-American 18%		22%	31%	43%
Hispanic 31%		34%	40%	49%
SWD 17%		21%	29%	41%
Not SWD	39%	41%	46%	52%
Eligible for Free/Reduced Priced Lunch	25%	28%	35%	44%
Not Eligible for Free/Reduced Priced Lunch	49%	50%	53%	56%
ELL 13%		17%	26%	39%
Not ELL	37%	39%	44%	51%
Female 39%		41%	46%	52%
Male 33%		36%	41%	49%
NAEP Grade 4 Mathematics, % of Students Scoring At or Above Proficient				
	Baseline (2009)	2011	2013	State Goal (2015)
All Students	40%	43%	50%	60%
White 53%		55%	60%	67%
African-American 20%		25%	36%	51%
Hispanic 33%		37%	45%	57%
SWD 26%		31%	40%	53%
Not SWD	43%	46%	52%	61%
Eligible for Free/Reduced Priced Lunch	29%	33%	42%	54%
Not Eligible for Free/Reduced Priced Lunch	55%	57%	61%	67%
ELL 19%		24%	35%	50%
Not ELL	42%	45%	52%	61%
Female 39%		43%	50%	60%
Male 42%		45%	52%	61%

Note: Some sub-groups have been excluded due to low sample size

A1-6: NAEP GOAL SUBGROUP DETAIL

NAEP Grade 8 Reading, % of Students Scoring At or Above Proficient				
	Baseline (2009)	2011	2013	State Goal (2015)
All Students	32% 34%	39%		45%
White	40% 42%	46%		51%
African-American	15% 19%	27%		39%
Hispanic	27% 30%	36%		45%
SWD	11% 15%	23%		35%
Not SWD	35% 37%	41%		47%
Eligible for Free/Reduced Priced Lunch	21%	24%	31%	40%
Not Eligible for Free/Reduced Priced Lunch	42%	43%	46%	50%
ELL 7%		11%	20%	33%
Not ELL	33%	35%	40%	46%
Female	37% 39%	43%		48%
Male	27% 30%	35%		43%
NAEP Grade 8 Mathematics, % of Students Scoring At or Above Proficient				
	Baseline (2009)	2011	2013	State Goal (2015)
All Students	29% 33%	42%		55%
White	39% 43%	50%		60%
African-American	13% 19%	30%		47%
Hispanic	22% 27%	37%		52%
SWD 8%		14%	27%	45%
Not SWD	32% 36%	45%		57%
Eligible for Free/Reduced Priced Lunch	18%	23%	34%	50%
Not Eligible for Free/Reduced Priced Lunch	40%	44%	51%	61%
ELL 4%		11%	24%	43%
Not ELL	30%	34%	43%	56%
Female	27% 32%	41%		54%
Male	31% 35%	44%		56%

Note: Some sub-groups have been excluded due to low sample size

A1-6: NAEP GOAL SUBGROUP DETAIL

NAEP Grade 4 Reading, % of Students Scoring At or Above Proficient – Achievement Gaps				
	Baseline (2009 Gap)	**2011 Gap**	**2013 Gap**	**State Goal (2015 Gap)**
White and African-American Students	27 percentage points	25 percentage points	20 percentage points	13 percentage points
White and Hispanic Students	14 percentage points	13 percentage points	11 percentage points	7 percentage points
Non-SWD and SWD	22 percentage points	20 percentage points	17 percentage points	11 percentage points
Not FRL and FRL	24 percentage points	22 percentage points	18 percentage points	12 percentage points
Not ELL and ELL	24 percentage points	22 percentage points	18 percentage points	12 percentage points
Female and Male Students	6 percentage points	5 percentage points	4 percentage points	3 percentage points
NAEP Grade 4 Mathematics, % of Students Scoring At or Above Proficient – Achievement Gaps				
	Baseline (2009 Gap)	**2011 Gap**	**2013 Gap**	**State Goal (2015 Gap)**
White and African-American Students	33 percentage points	30 percentage points	24 percentage points	16 percentage points
White and Hispanic Students	20 percentage points	18 percentage points	15 percentage points	10 percentage points
Non-SWD and SWD	17 percentage points	15 percentage points	12 percentage points	8 percentage points
Not FRL and FRL	26 percentage points	24 percentage points	19 percentage points	13 percentage points
Not ELL and ELL	23 percentage points	21 percentage points	17 percentage points	11 percentage points
Male and Female Students	3 percentage points	2 percentage points	2 percentage points	1 percentage point

A1-6: NAEP GOAL SUBGROUP DETAIL

NAEP Grade 8 Reading, % of Students Scoring At or Above Proficient – Achievement Gaps				
	Baseline (2009 Gap)	2011 Gap	2013 Gap	State Goal (2015 Gap)
White and African-American Students	25 percentage points	23 percentage points	19 percentage points	12 percentage points
White and Hispanic Students	13 percentage points	12 percentage points	10 percentage points	6 percentage points
Non-SWD and SWD	24 percentage points	22 percentage points	18 percentage points	12 percentage points
Not FRL and FRL	21 percentage points	19 percentage points	15 percentage points	10 percentage points
Not ELL and ELL	26 percentage points	24 percentage points	20 percentage points	13 percentage points
Female and Male Students	10 percentage points	9 percentage points	8 percentage points	5 percentage points
NAEP Grade 8 Mathematics, % of Students Scoring At or Above Proficient – Achievement Gaps				
	Baseline (2009 Gap)	2011 Gap	2013 Gap	State Goal (2015 Gap)
White and African-American Students	26 percentage points	24 percentage points	20 percentage points	13 percentage points
White and Hispanic Students	17 percentage points	16 percentage points	13 percentage points	8 percentage points
Non-SWD and SWD	24 percentage points	22 percentage points	18 percentage points	12 percentage points
Not FRL and FRL	22 percentage points	21 percentage points	17 percentage points	11 percentage points
Not ELL and ELL	26 percentage points	23 percentage points	19 percentage points	13 percentage points
Male and Female Students	4 percentage points	3 percentage points	3 percentage points	2 percentage points

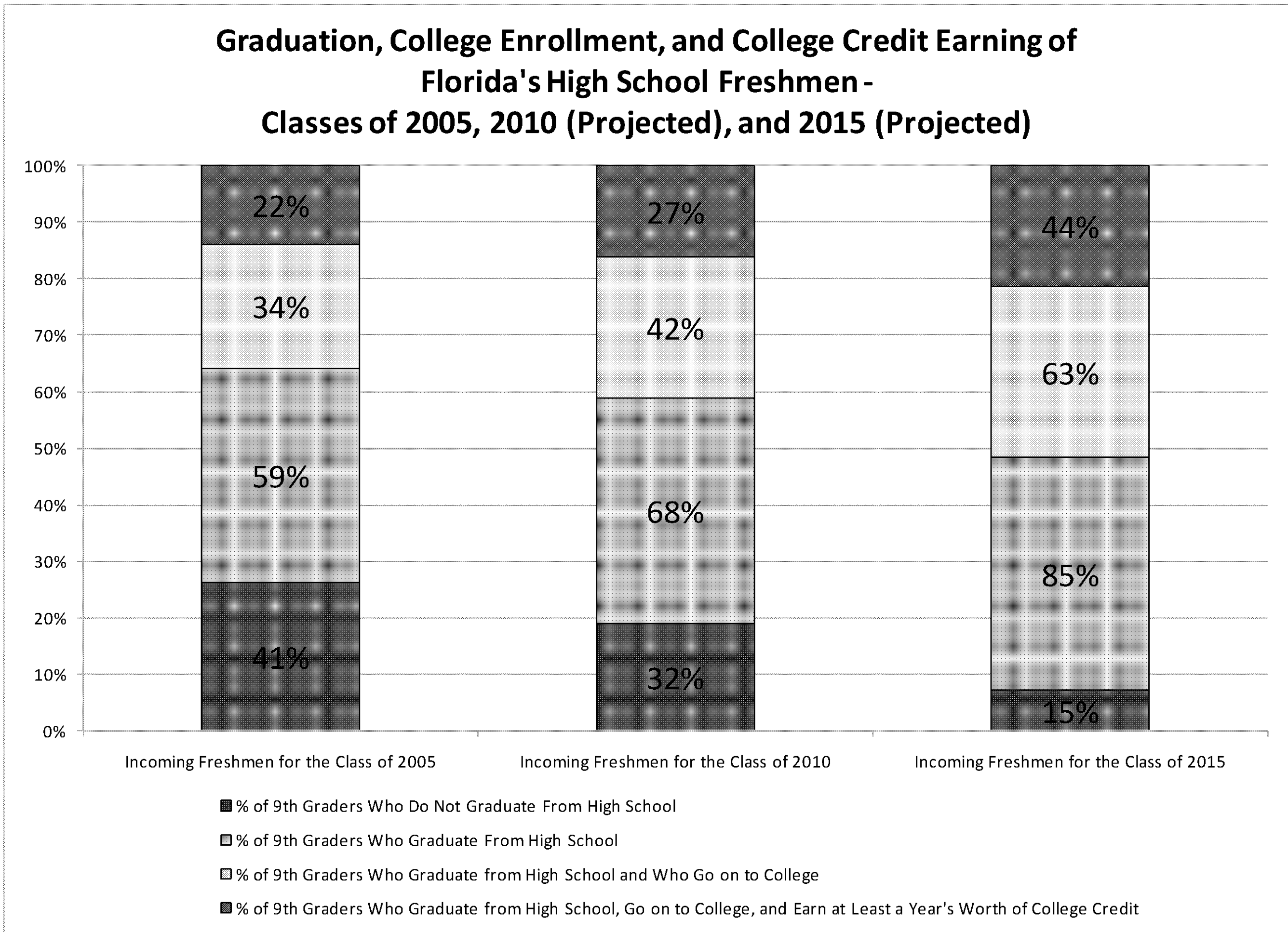
A1-7: HIGH SCHOOL GRADUATION AND COLLEGE READINESS GOAL SUBGROUP DETAIL

Note on Lagged Measures:

Florida has chosen to set its graduation and postsecondary goals based on a cohort of students – the graduating class of students in a given year. The ultimate goal for RTTT purposes is set for the high school graduating class of 2015. Given this emphasis on a cohort of students, rather than an annual snapshot of different groups of students, and the inherent lag in the measures (i.e., within two years of graduation, within two years of enrollment), measures of this cohort of students will be released at different times. Here's the convention: In the Fall of 2009, graduation data is available for the Class of 2009; college enrollment data is available for the Class of 2007; and college credit accumulation data is available for the Class of 2005. Therefore, for the Class of 2015, graduation data will be available in the Fall of 2015; college enrollment data will be available in Fall of 2017; and college credit accumulation data will be available in the fall of 2019.

Summary of Data Availability for the Cohort-Based Measures: High School Graduation Rate, College Enrollment Rate, and College Credit Earning Rate						
High School Graduating Class of	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
High School Graduation Rate	Fall 2010	Fall 2011	Fall 2012	Fall 2013	Fall 2014	Fall 2015
College Enrollment Rate	Fall 2012	Fall 2013	Fall 2014	Fall 2015	Fall 2016	Fall 2017
College Credit Earning Rate	Fall 2014 Fa	l 2015 Fa	l 2016 Fa	l 2017 Fa	l 2018 Fa	l 2019

A1-7: HIGH SCHOOL GRADUATION AND COLLEGE READINESS GOAL SUBGROUP DETAIL



A1-7: HIGH SCHOOL GRADUATION AND COLLEGE READINESS GOAL SUBGROUP DETAIL

Increasing High School Graduation Rates							
	Baseline (High School Class of 2009)	High School Class of 2010	High School Class of 2011	High School Class of 2012	High School Class of 2013	High School Class of 2014	High School Class of 2015
All Students	66%	68% 69%	72%	76%	80%	85%	
White	71%	72% 74%	77%	80%	84%	88%	
African-American	54%	56% 58%	63%	67%	74%	80%	
Hispanic	63%	65% 67%	70%	74%	79%	84%	
Asian	83%	84% 85%	87%	89%	91%	94%	
American Indian	65%	67% 68%	72%	75%	80%	85%	
Multiracial 72%		73%	75% 77%	80% 84% 88%			
SWD	37%	40% 43%	49%	56%	65%	74%	
FRL	55%	57% 60%	64%	69%	75%	82%	
ELL	51%	53% 56%	60%	65%	72% 79%		
Migrant	52%	54% 56%	61%	65%	72%	78%	
Female	71%	72% 74%	77%	80%	84%	88%	
Male	60%	62% 64%	68%	72%	77%	83%	

A1-7: HIGH SCHOOL GRADUATION AND COLLEGE READINESS GOAL SUBGROUP DETAIL

Increasing College Enrollment Rates *College enrollment is defined in this notice as the enrollment of students who graduate from high school consistent with 34 CFR 200.19(b)(1) and who enroll in an institution of higher education (as defined in section 101 of the Higher Education Act, P.L. 105-244, 20 U.S.C. 1001) within 16 months of graduation.*							
	Baseline (High School Class of 2007)	High School Class of 2010	High School Class of 2011	High School Class of 2012	High School Class of 2013	High School Class of 2014	High School Class of 2015
All Students	60%	63% 64%	65%	67%	71%	74%	
White	62%	64% 65%	67%	69%	72%	75%	
African-American	53%	56% 58%	60%	62%	67%	71%	
Hispanic	60%	63% 64%	65%	67%	71%	74%	
Asian	71%	73% 73%	74%	75%	77%	79%	
American Indian	61%	64% 65%	66%	68%	72%	75%	
Multiracial 58%		61%	62% 64%	66% 69% 73%			
SWD	40%	45% 46%	49%	53%	59%	65%	
FRL	52%	56% 57%	60%	62%	67%	72%	
ELL	51%	55% 56%	58%	61%	65% 70%		
Migrant	41%	46% 47%	50%	53%	59%	65%	
Female	64%	67% 68%	69%	71%	75%	78%	
Male	56%	60% 61%	64%	66%	71%	76%	

A1-7: HIGH SCHOOL GRADUATION AND COLLEGE READINESS GOAL SUBGROUP DETAIL

Increasing College Credit Earning Rate as Percent of Students Entering Full-Time Postsecondary Education

College credit is measured as credit earned that is applicable to a degree within two years of enrollment in an institution of higher education

	Baseline (High School Class of 2005)	High School Class of 2010	High School Class of 2011	High School Class of 2012	High School Class of 2013	High School Class of 2014	High School Class of 2015
All Students	63%	65% 65%	66%	67%	68%	70%	
White	66%	68% 68%	68%	69%	71%	72%	
African-American	54%	57% 58%	59%	60%	63%	66%	
Hispanic	59%	62% 62%	63%	64%	67%	69%	
Asian	78%	80% 80%	80%	81%	83%	84%	
American Indian	59%	62% 62%	63%	64%	67%	69%	
Multiracial 61%		63%	64% 65%	66% 68% 70%			
SWD	43%	48% 48%	50%	52%	57%	61%	
FRL	55%	58% 59%	60%	62%	65%	68%	
ELL	61%	63% 63%	64%	65%	67% 69%		
Migrant	54%	57% 58%	59%	60%	63%	66%	
Female	66%	68% 68%	68%	69%	71%	72%	
Male	58%	61% 61%	62%	63%	66%	68%	

A1-7: HIGH SCHOOL GRADUATION AND COLLEGE READINESS GOAL SUBGROUP DETAIL

Increasing High School Graduation Rates – Reducing the Gaps		
	Baseline (High School Class of 2009)	**High School Class of 2015**
White and African-American Students	17 percentage points	8 percentage points
White and Hispanic Students	8 percentage points	4 percentage points
Increasing College Enrollment Rates – Reducing the Gaps *College enrollment is defined in this notice as the enrollment of students who graduate from high school consistent with 34 CFR 200.19(b)(1) and who enroll in an institution of higher education (as defined in section 101 of the Higher Education Act, P.L. 105-244, 20 U.S.C. 1001) within 16 months of graduation.*		
	Baseline (High School Class of 2007)	**High School Class of 2015**
White and African-American Students	9 percentage points	4 percentage points
White and Hispanic Students	2 percentage points	1 percentage point
Increasing College Credit Earning Rate as Percent of Students Entering Full-Time Postsecondary Education – Reducing the Gaps *College credit is measured as credit earned that is applicable to a degree within two years of enrollment in an institution of higher education*		
	Baseline (High School Class of 2005)	**High School Class of 2015**
White and African-American Students	12 percentage points	6 percentage points
White and Hispanic Students	7 percentage points	3 percentage points

A2-1: SUPPORT FOR PARTICIPATING LEAs

Race to the Top provides the opportunity for an unprecedented amount of support for LEAs, including the following organized by assurance area.

STANDARDS AND ASSESSMENTS

- **Provide a Web-based portal** with single sign-on access and customer friendly navigation to a variety of digital resources including, but not limited to: multiple educational tools, student achievement data, and a list of instructional materials utilized by teachers whose instruction results in the greatest student achievement gains.

- **Update the Florida's Teacher Standards Instructional Tool to Common Core:**
  - Populate standards database with Common Core standards for easy access that include the following resources for teachers: Common Core skills-level information, cognitive complexity ratings for each standard to guide instruction and assessment, standards for student with disabilities, English Language Proficiency standards, performance descriptions with exemplars for each standards, and links to quality-reviewed model lessons.
  - Revise course descriptions and the course code directory that include the Common Core and Next Generation Sunshine State Standards.
  - Provide access to skills-level resources, including formative assessment tasks/scoring rubrics, through a graphical learning progressions menu of Common Core Standards and NGSSS and provide lesson study toolkits to support embedded professional development focused on (1) use of these assessments in instructional improvement and (2) research-based formative assessment practices.

- **Develop the Highly Effective Teacher Instructional Materials Database:** This database will be built for teachers to report the instructional materials they are using to support instruction of the Common Core plus NGSSS in science. The data system will be designed to generate reports of the instructional materials used in classrooms of highly effective teachers. This information will be available to guide districts and schools in making instructional materials decisions.

- **Update Student Standards Tutorial** to provide support for Common Core plus NGSSS in science, and Common Core summative assessments.

- **Postsecondary Text Demand Study:** To ensure alignment of the text demand of instructional materials used at the high school level in preparation for progression to the college level, Florida will conduct a survey of high school textbooks in Common Core and science courses with those being assigned to students in typical entry-level courses offered within the public, technical, community college, and university systems in Florida.

- **Increase Access to STEM Courses**. This initiative will provide an opportunity for consortiums that serve rural districts to compete for funds to build and implement model high school STEM programs of study for our gifted and talented students through a combination of virtual education (Florida is a national leader in this area), school of enrollment course work, post secondary study, accelerated course work, independent study that includes research, business/industry internships, and other options appropriate to the individual student being served.

DATA SYSTEMS TO SUPPORT INSTRUCTION

- **Create a centralized portal** to serve as the gateway to publicly accessible actionable information and to secure, confidential resources via **single sign-on**. FDOE will centralize access to the data in its statewide longitudinal data system and key state technology resources (applications). Just-in-time access to actionable information about assessments, standards, instructional resources, evaluations, and professional development in the form of dashboards, pre-defined and customizable reports, and applications will be made available on the portal. State applications that will be accessible include: Teacher Standards Instructional Tool; K-12 Interim Assessment System for Reading; FACTS.org; Interim Assessment Item Banks and Test Platform; eIPEP; and FloridaSchoolLeaders.org.

- **Increase acquisition and implementation of local instructional improvement systems** (LIIS) that meet minimum standards. FDOE will develop a minimum set of standards for LIIS to ensure LEAs implement systems designed to meet stakeholder needs for access to and use of data. FDOE will create the Local Instructional Improvement System Exchange to facilitate the acquisition and implementation of LIIS' through collaboration and exchange of ideas, systems, and related implementation services on a statewide basis. FDOE will administer a needs-based grant from its portion of RTTT funds to help LEAs cover initial purchase, installation, and training costs of an LIIS.

- **Provide professional development** to all schools in all LEA's on how to access and use data. FDOE will provide professional development on **how to access** data and technology resources and on **how to use** data using a regional team-based approach. A Data Captain will lead regional teams of coaches in the coordinated delivery of professional development to every school in every LEA in Florida. Supplementing the regional teams will be a collection of **multi-media materials to reinforce learning, usage, and full adoption of the new skills and abilities around accessing and using data**. The supplementary materials will be available on the centralized portal. Other initiatives supporting professional development include:
  - Providing teachers with lesson study toolkits on the use of data as it relates to the Common Core State Standards and interim assessments through Standards and Assessment.
  - Offering leadership training in project management, data analysis, and strategic planning to teachers, principals, and administrators through Turning Around the Lowest-Achieving Schools.
  - Setting guidelines for LEA development of beginning teacher support programs through Great Teachers and Leaders.

GREAT TEACHERS AND LEADERS

- **FDOE will provide a transparent process for districts and teachers to use the state student growth measure**, along with support and models for measuring student growth in courses and grades not included in the state student assessment system.
  - FDOE has contracted services with a national expert to assist the FDOE and other stakeholders in selecting the type of measure to calculate student growth.
  - FDOE will contract with an entity expert in value added calculation to work with the Department in collaboration with educators and other stakeholders develop the state's new student growth measure. The selected expert will annually and timely calculate student growth based on each student's performance on the state assessment and associated with each course and the responsible teacher and principal.
  - FDOE will engage districts, educators and the public in extensive and transparent communication and education on the state's selected student growth measure, to ensure that the results are meaningful and useful in improving human capital decisions and student achievement.
  - To assist districts in expanding objective measures of student growth to courses other than reading and mathematics in grades four through ten, FDOE will contract with an expert entity to develop a method of calculating growth assessed by selected national assessments, such as tests required by advanced courses (such as Advanced Placement, International Baccalaureate, etc.), where no pretest is available (Fall 2011).

- By January 2011, through the competitive bid process, **FDOE will contract with an entity(ies) to develop mathematics, English language arts, science, social studies, and Spanish interim assessment item banks/test platforms**.
  - A contract will be issued to an appropriate entity for the development of Item Bank infrastructure with access to the test items for district-wide assessment-building purposes, specifically, interim assessment item banks/test platforms for K-8 Mathematics, Algebra I, Geometry, and Algebra II; Grades K-12 English language arts; Grades K-8 Science, Biology, Earth/Space Science, Physics, and Chemistry; Grades K-8 Social Studies, U.S. History, World History, U.S. Government, and Economics; and Spanish.
  - FDOE will enlist participating district representatives and representatives of state associations for these content areas to develop appropriate performance and peer-reviewed student assessments and will facilitate the incorporation of these in participating district assessment programs (and in involved districts who wish to do so).

- **FDOE will invest significant resources in securing an evaluator with specific expertise in education human capital**. This evaluation will include the effects of new student growth measures, evaluation systems, compensation programs and professional development on student performance, the teacher workforce and climate of our participating districts and schools. In addition, because the evaluation will be taking place throughout the grant period, annual and other interim results will be coordinated with other statewide supports and used to improve statewide initiatives implemented through RTTT. Statewide supports include:
  - FDOE will contract with national experts in teacher evaluation to provide face-to-face support to participating districts in re-developing their evaluation systems (year one).

In years two through four, experts will continue supporting their districts with monitoring and feedback in the implementation of their evaluation systems.
    - FDOE will collect data from districts on evaluation results of teachers, principals and supervisors and analyze these data against student performance data, and will provide the results to participating districts for improvement and the public for awareness.

- **FDOE will support districts in restructuring compensation, employment, professional development, and leadership opportunities** with a priority on student performance, so that highly effective individuals are retained in Florida, and especially with our most vulnerable students. In addition, FDOE will improve data reporting and analysis capabilities and leverage performance results at all levels to realize system-wide and student level success.
    - FDOE will evaluate each participating district's work plan based on whether it reflects the direct connection and feedback loop from formal and informal evaluation results to professional development, especially in instituting lesson study and instructional coaching.
    - To monitor the use of compensation systems, FDOE will publish salary schedules in a manner easily accessible by the public and will report the status of districts in implementing this requirement.

- **FDOE will seek to award two to three entities that have proven records in improving leadership in schools** to implement streamlined, intensive, job-embedded school leadership preparation programs that will result in dual Level I and Level II school leadership certification for the completers. Because these programs are job-embedded, this will provide an opportunity for willing districts to benefit from a partnership with an outside entity with proven expertise in results-oriented leadership development.

- **FLDOE will provide effective professional development to teachers and principals, and district administrators that results in improved student achievement**
    - See professional development activities related to sections B, C, and E.
    - Set guidelines for district development of beginning teacher support programs in collaboration with participating districts and two colleges of education who receive competitive grants to become research centers on teacher preparation and induction support.
    - Conduct training for school boards in successful practices in school improvement and education human capital
    - Institute the Commissioner's Leadership Academy to build capacity for leadership at the district, region and state level
    - Coordinate the use of Title II A funds, as well as appropriate IDEA and Title I funds, at the state level and district on Evaluation of teacher professional development based on change in classroom practice and student learning outcomes
    - Training for teachers and principals in lesson study, coaching and classroom observations, and use of student data to drive instruction
    - Training for teachers, principals, and professional developers on the use of data from evaluations to guide professional development
    - Create multi-media professional development materials that encourage understanding and use of the customer-friendly web-based interface and state data resources
    - Training for district data and human resources administrators on changes to data reporting to improve the accuracy and usefulness of our reporting of and

dissemination of results from professional development associated with each teacher and school principal

TURNING AROUND THE LOWEST-ACHIEVING SCHOOLS

- **Extend Support to all Persistently Lowest-Achieving Schools**
  - The effective support that the DA Regional Teams provide to the state's lowest-performing schools will be expanded to include all persistently lowest-achieving schools.

- **Teacher Recruitment**
  - The FDOE will partner with organizations that recruit and train promising teachers for Miami-Dade and Duval school districts.

- **Leadership Pipeline for Turnaround Principals and Assistant Principals**
  - FDOE proposes to select a leadership preparation program partner through a competitive RFP process. The program will prepare aspiring school leaders to effectively address the teaching and learning challenges of persistently lowest-achieving high schools and their feeder patterns. This objective will be achieved by working with seven urban school districts and institutions of higher education to annually recruit, train, and certify 80 to 100 new leaders committed to working with teachers, parents and community leaders to implement changes that are linked to increased student achievement.

- **Building District-Level Capacity for Turnaround in Rural Districts**
  - The state-led initiative is to partner with an outside provider to help build district leaders' capacity to support low-performing schools in 10 struggling, rural districts in Florida. The partner will adapt and deliver leadership modules and coaching targeted at improving the capacities of the superintendent, school board, and central office staff in districts with the state's persistently lowest-achieving schools. District leaders will be guided in establishing strategic plans, bold goals, and evaluation systems that align district support to improve low performing schools. District leaders also will receive training in community involvement and developing a shared vision for improving schools.

- **Differentiated Accountability Summer Academy**:
  - At the summer DA Academy, DA Regional Teams will provide professional development to instructional coaches, department chairs, and lead teachers from the state's persistently lowest-achieving schools and their feeder patterns in the areas of lesson study, new standards, Response to Intervention (RtI), and the Florida Continuous Improvement Model (FCIM) in the summer over a two-year period.

- **Reading and Science, Technology, Engineering and Mathematics (STEM) Coordinators**

- The reading focus of this state-led initiative is to hire 40 reading coordinators who will be distributed throughout the state and will be strategically assigned to persistently lowest-achieving schools and their feeder schools under the direction of the five DA Regional Teams. Coordinators will work specifically with school-site reading coaches that are assigned by districts to improve the implementation of reading intervention programs, assist with analyzing interim assessment data, implementation of lesson study, and direct instructional intervention based on the interim assessment data. Although the focus of the coordinators will be at the school-site, training will also be coordinated to train coaches and teachers district-wide in the areas of reading endorsement, reading interim assessments, and lesson study as well.

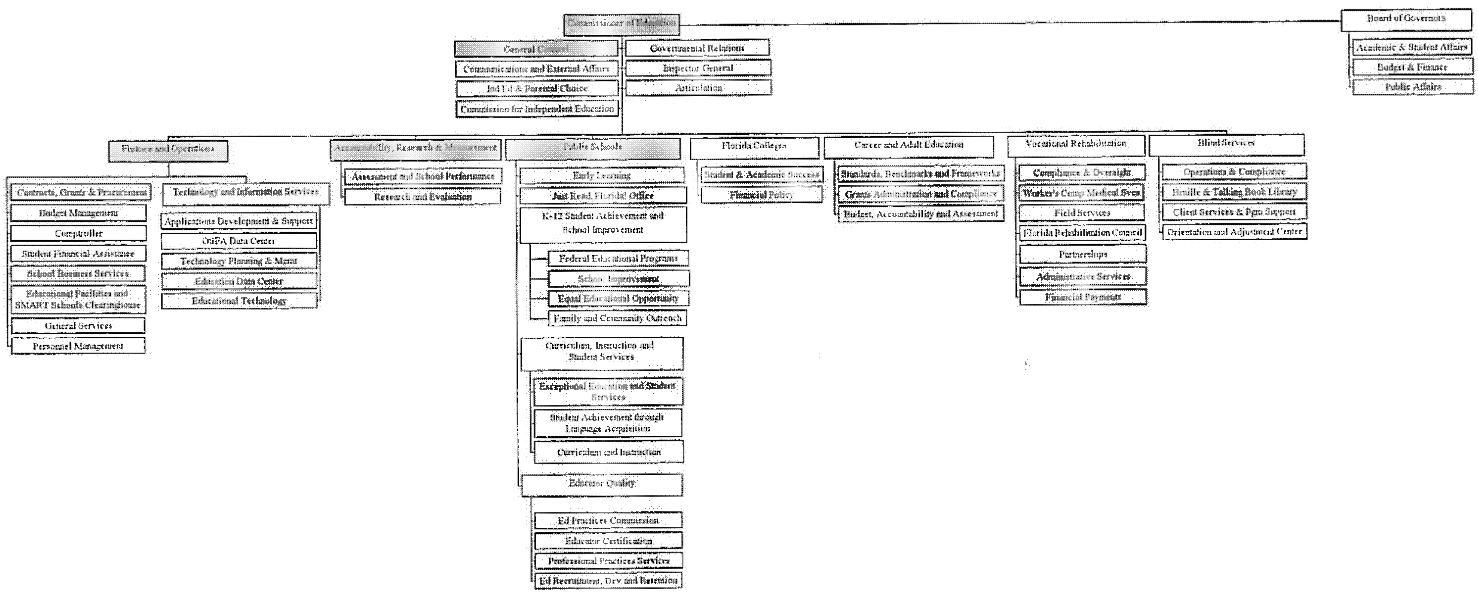
- The STEM focus of this proposed state-led initiative is to hire 20 STEM coordinators who will be distributed throughout the state and be strategically assigned to persistently lowest-achieving schools and their feeder schools under the direction of the five DA Regional Teams. Coordinators will work specifically with school-site mathematics and science coaches that are assigned by districts to improve the implementation of new mathematics and science standards, start or improve implementation of the lesson study process in mathematics and science, assist with analyzing data from newly created and implemented interim assessments; and direct instructional intervention based on the data. A focus will also be placed on improving and expanding Career STEM Academies at the high school level.

A2-2: DOE Organizational Charts

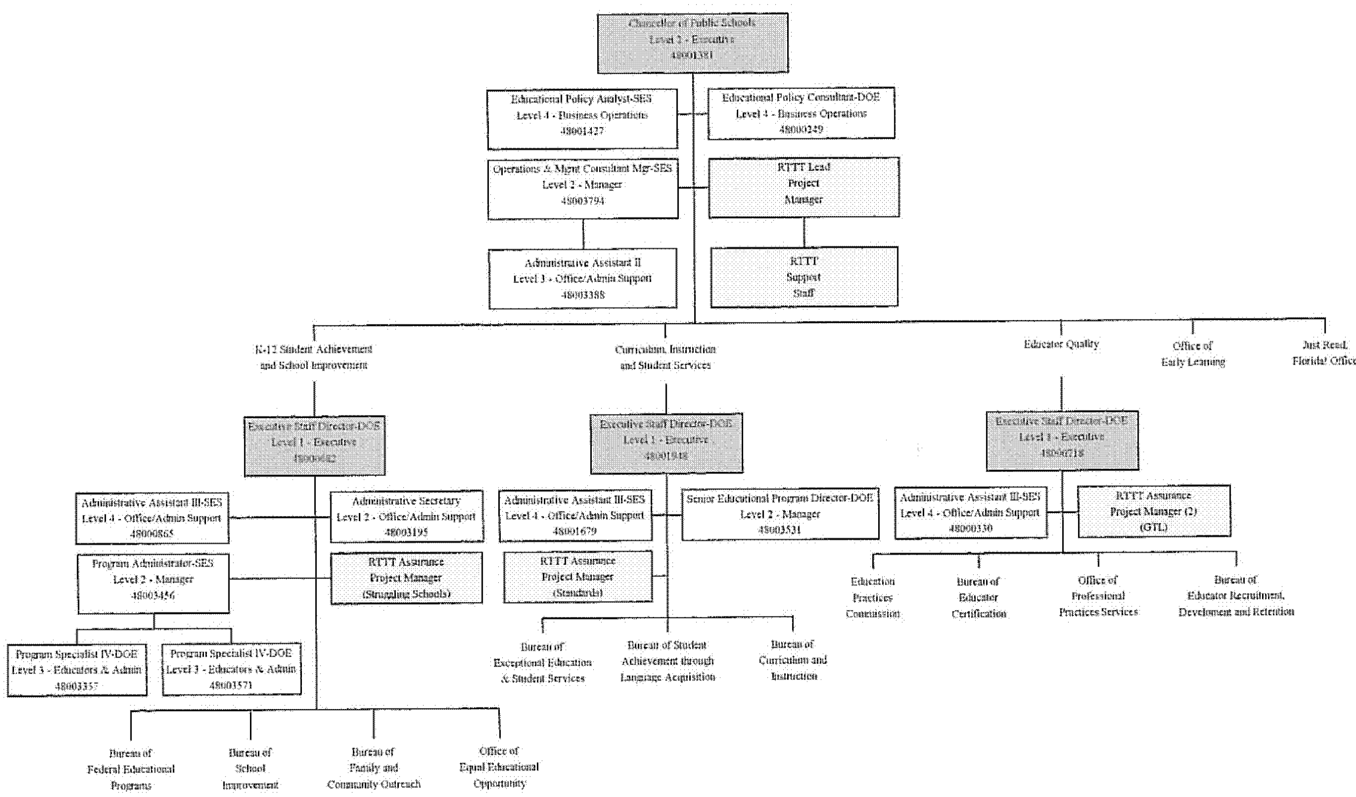
Below are organizational charts for the Florida Department of Education that depict the structure under which FDOE proposes to implement the RTTT grant.

Boxes highlighted in green represent current key personnel. Boxes highlighted in yellow represent positions for which funding is requested from the RTTT award.

FLORIDA DEPARTMENT OF EDUCATION



FLORIDA DEPARTMENT OF EDUCATION
COMMISSIONER OF EDUCATION
DIVISION OF PUBLIC SCHOOLS



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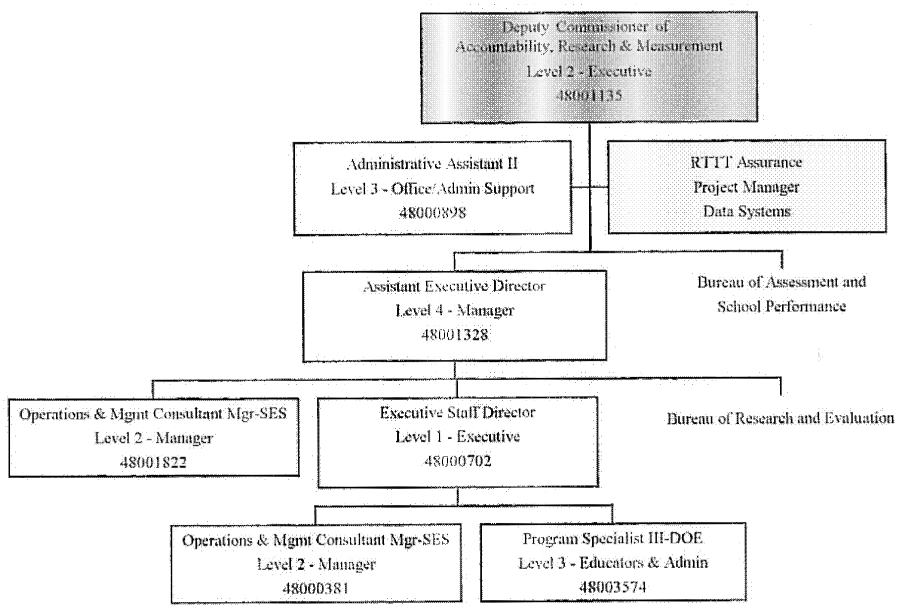
DIVISION OF ACCOUNTABILITY, RESEARCH AND MEASUREMENT



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FLORIDA DEPARTMENT OF EDUCATION
COMMISSIONER OF EDUCATION
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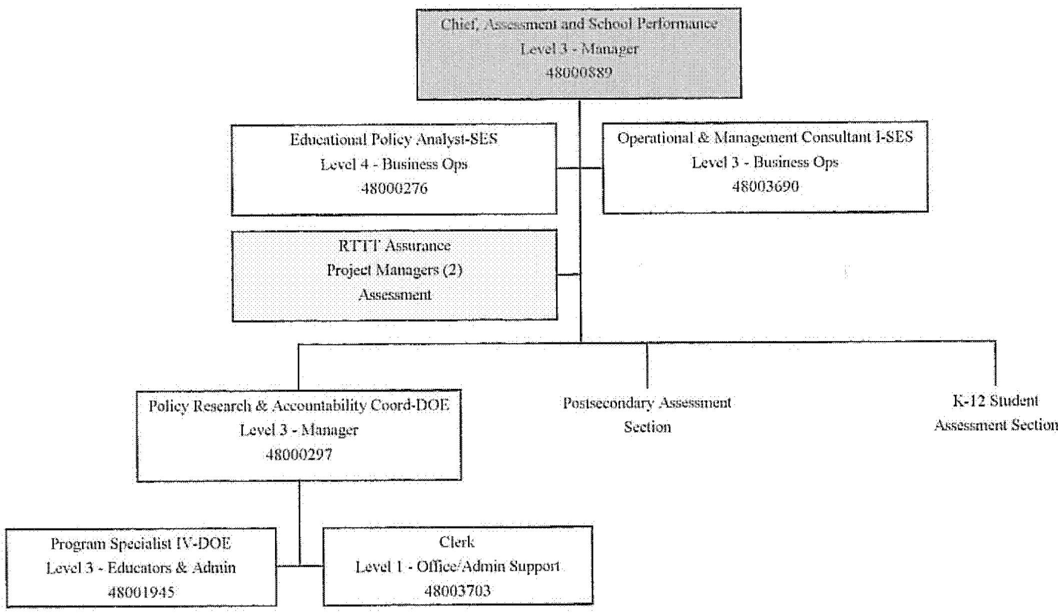
BUREAU OF ASSESSMENT AND SCHOOL PERFORMANCE



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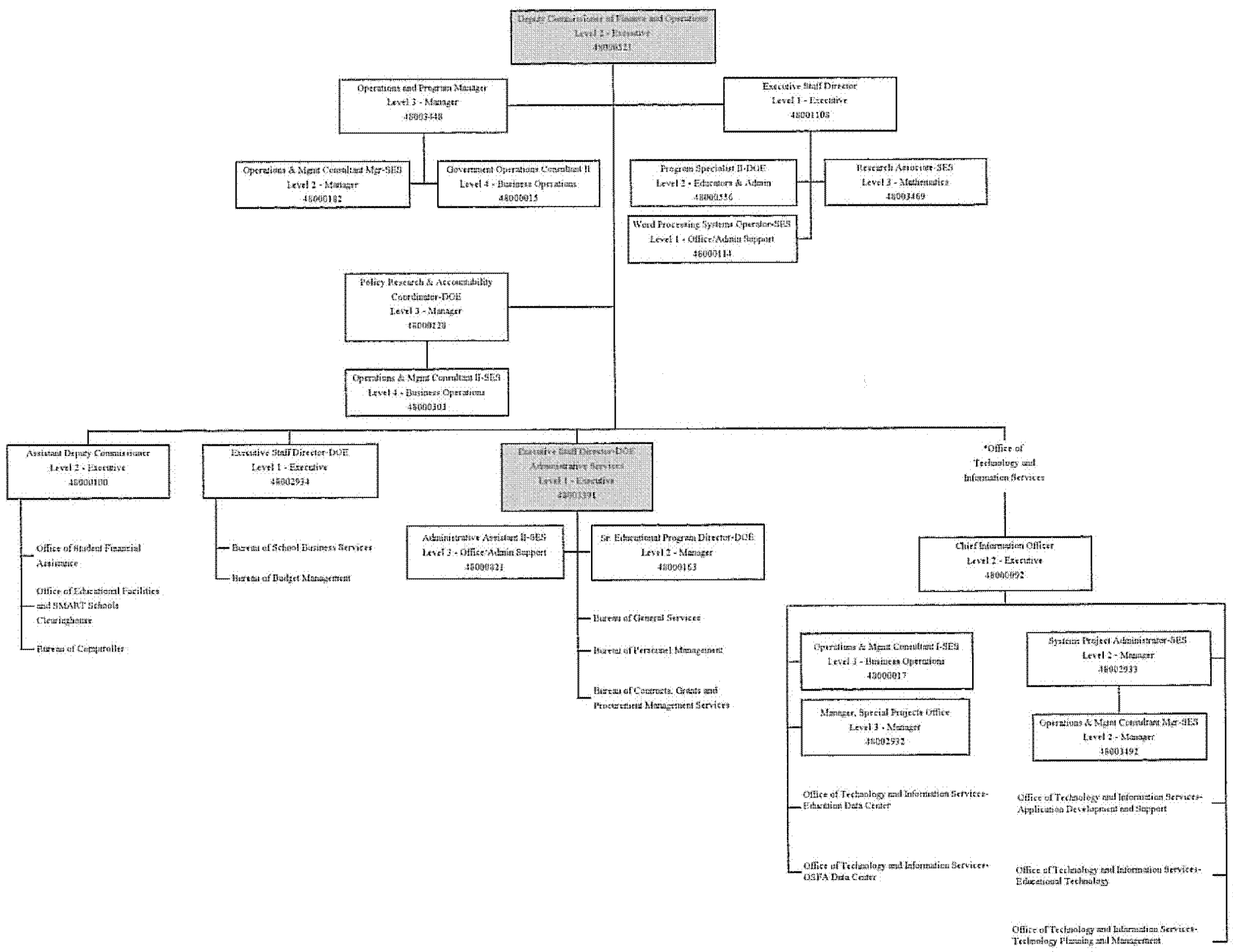
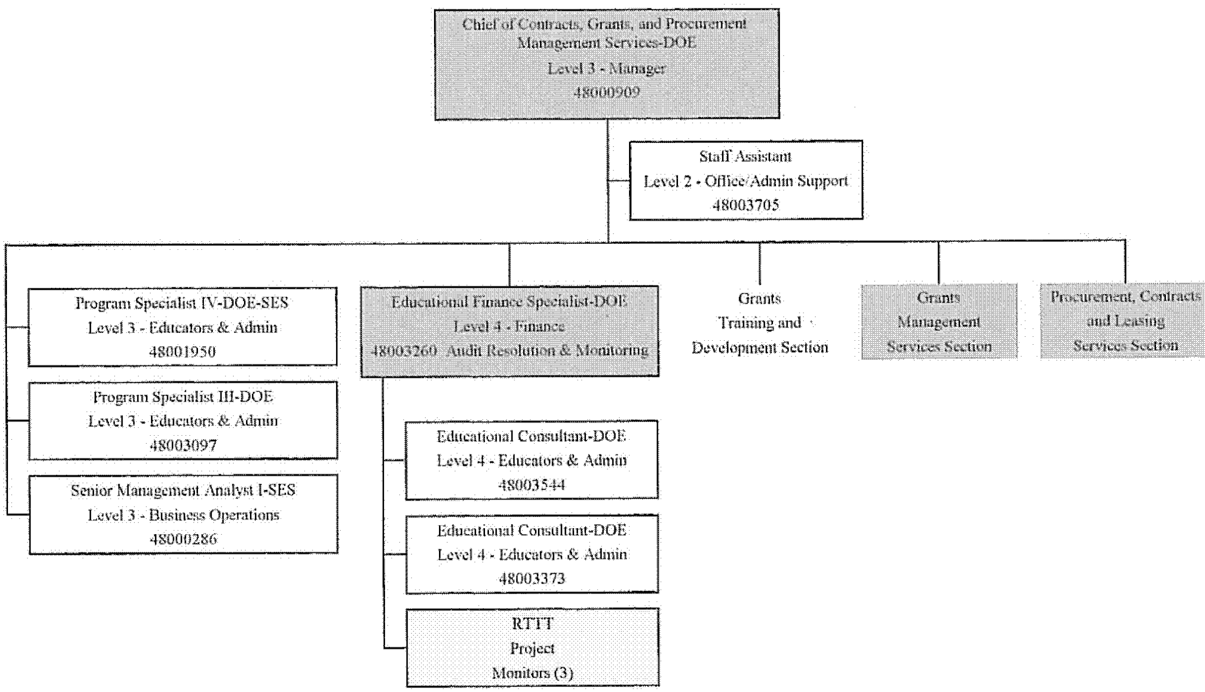
FLORIDA DEPARTMENT OF EDUCATION
COMMISSIONER OF EDUCATION
DIVISION OF FINANCE AND OPERATIONS



FLORIDA DEPARTMENT OF EDUCATION
COMMISSIONER OF EDUCATION
DIVISION OF FINANCE AND OPERATIONS
BUREAU OF CONTRACTS, GRANTS, AND PROCUREMENT MANAGEMENT SERVICES



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FLORIDA DEPARTMENT OF EDUCATION
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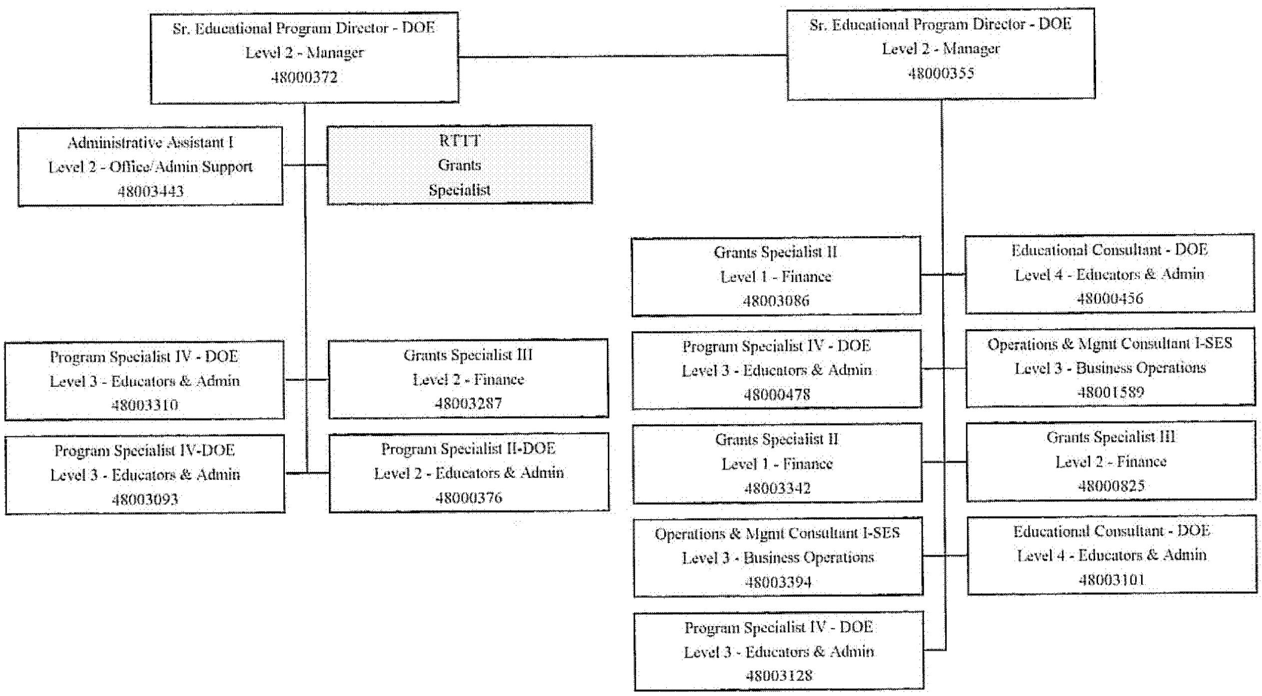
DIVISION OF FINANCE AND OPERATIONS
BUREAU OF CONTRACTS, GRANTS, AND PROCUREMENT MANAGEMENT SERVICES
GRANTS MANAGEMENT SERVICES SECTION



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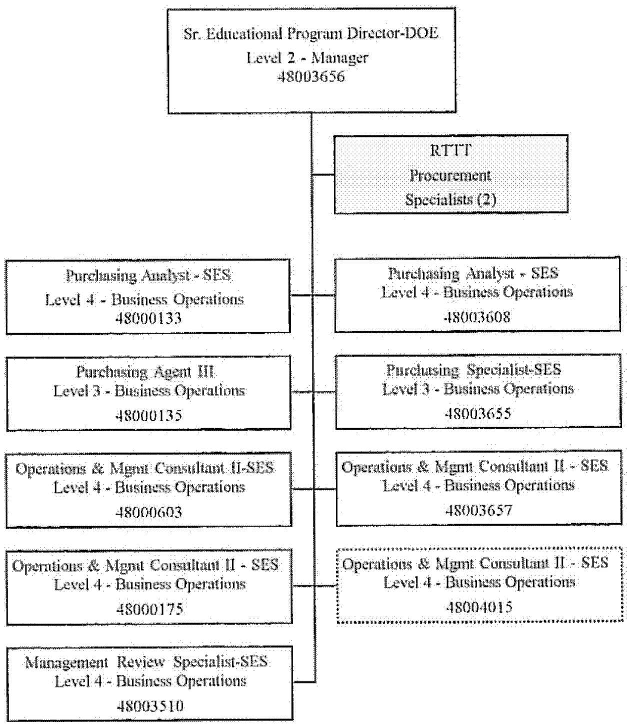
FLORIDA DEPARTMENT OF EDUCATION
COMMISSIONER OF EDUCATION
DIVISION OF FINANCE AND OPERATIONS
BUREAU OF CONTRACTS, GRANTS, AND PROCUREMENT MANAGEMENT SERVICES
PROCUREMENT, CONTRACTS AND LEASING SERVICES SECTION



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FLORIDA DEPARTMENT OF EDUCATION
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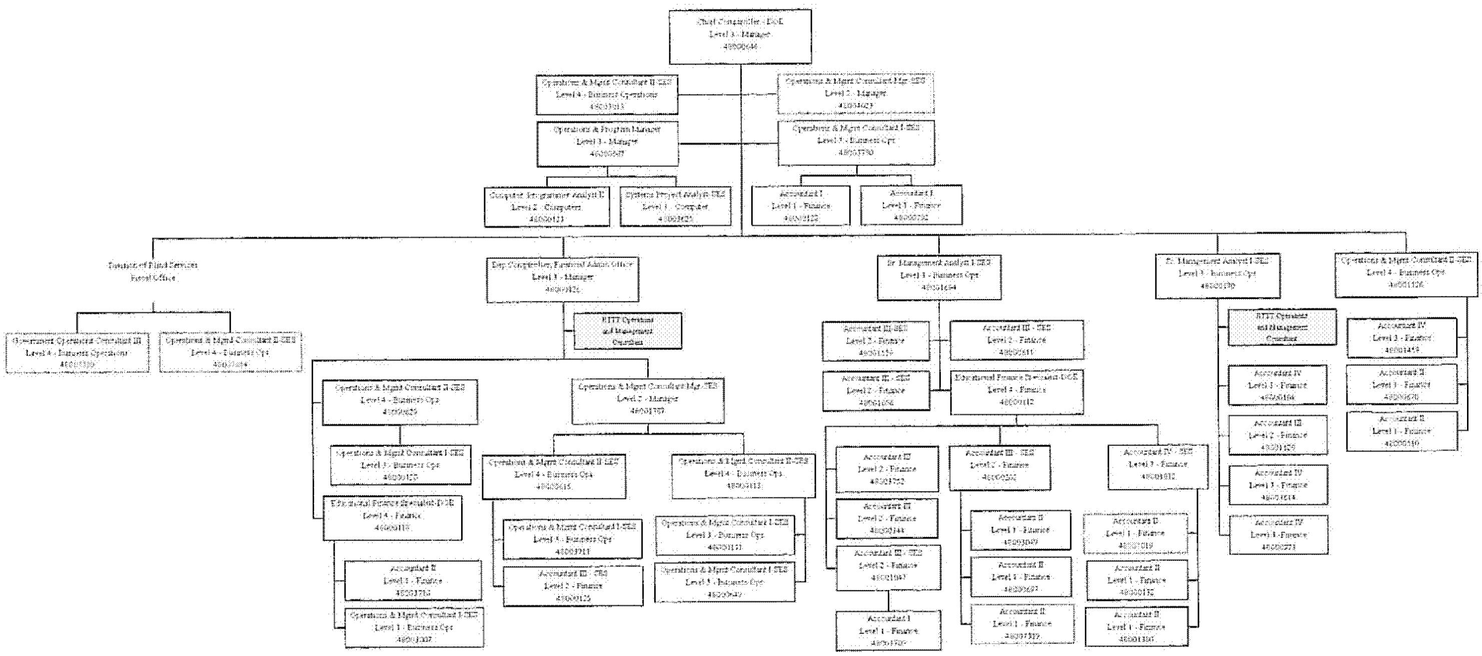
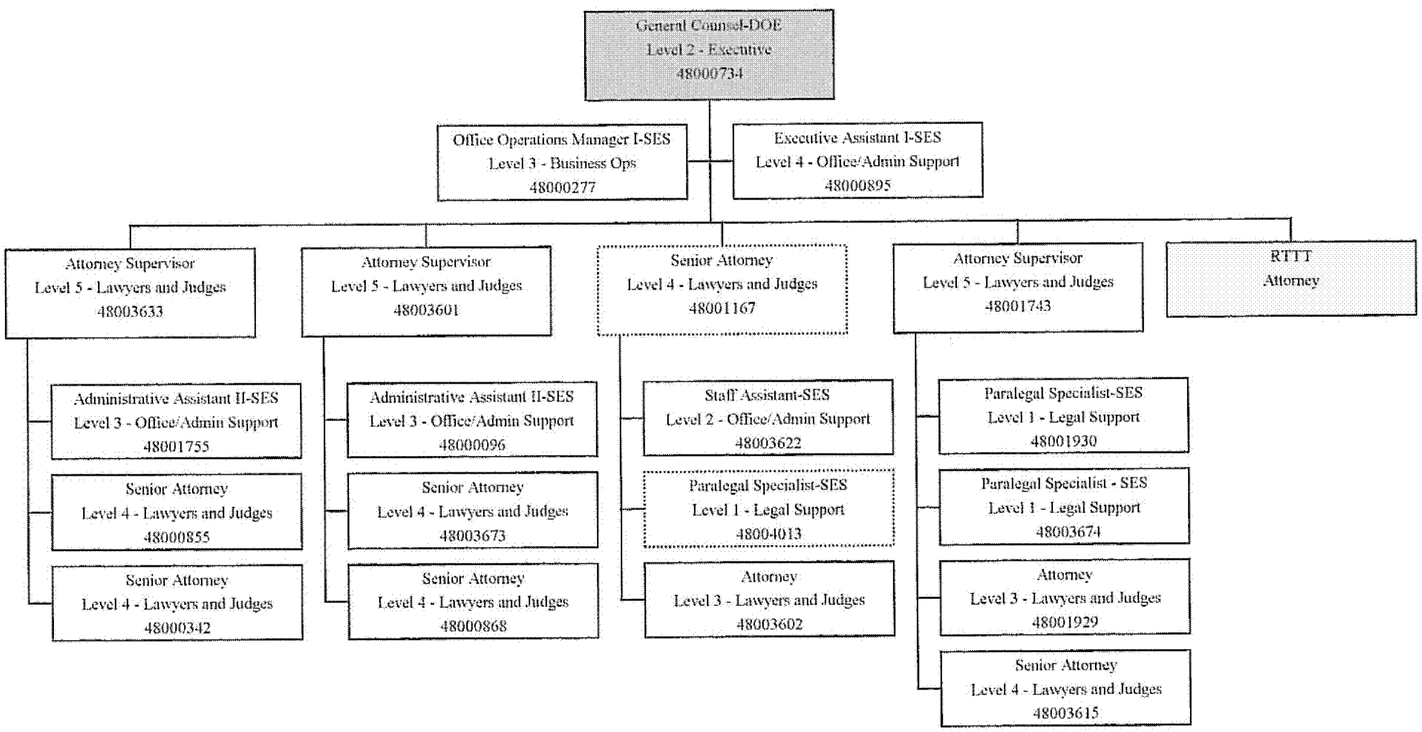


FLORIDA DEPARTMENT OF EDUCATION
COMMISSIONER OF EDUCATION
OFFICE OF THE COMMISSIONER
OFFICE OF THE GENERAL COUNSEL



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A2-3: Formal Procurement Policies and Procedures

Requirement Florida	
Codified in State Statute and Agency Procedures	• Chapter 287, Laws of Florida • Florida Department of Education Internal Operating Procedures, Section 5
Threshold for Competitive Bids	All procurements of $25,000 or more must be competitively bid (unless they qualify as sole source)
Options for Competitive Solicitations	• Request for Proposals (RFP) • Invitation to Negotiate (ITN) • Invitation to Bid (ITB) • Request for Quote (RFQ) RFP – The department has a good idea what is needed and it is more advantageous to consider other criteria in addition to price in the evaluation. ITN – The department is not able to clearly define what is needed and negotiations are necessary to obtain the best value to the state. A Florida Certified Negotiator is required to be on the negotiation team if the project is over $1 million and a Project Management Professional if over $10 million. ITB – The department knows exactly what it wants and evaluates price only. RFQ – There is a state term contract with multiple vendors awarded who are contacted to bid on a specific scope within the general requirements of the state term contract. Only contractors on the state term contract are contacted or may respond. Solicitations for project management partner and/or assessment development would most likely require use of an RFP or an ITN
Posting of Solicitations, Notices, Intents to Award, etc.	Department of Management Services (DMS) Vendor Bid System located at: http://vbs.dms.state.fl.us/vbs/main_menu All procurements exceeding the threshold, related actions and agency procurement decisions must be posted on this system.
Length of Posting	The minimum time that solicitations must be posted is ten days; and the agency's decision to award must be posted for a minimum of three days. Certain other actions have no minimum posting period.

Requirement Florida	
Protests	Any bidder may protest the scope of work or outcome of a competitive solicitation. A bidder may file an Intent to Protest and be allowed 10 days to file a formal protest. A protesting bidder is required to post a bond in order to pursue such a protest.
Single Source Posting	If the Department believes commodities or contractual services are available from only one source, the Department must electronically post a description of such commodities or services for a period of at least seven business days. During that period interested parties may contact the department and if it is proven that they can perform the project may be competitively procured. If the agency decides to proceed with the single source the final decision is posted for three days. It is not likely that solicitation for project management partner and/or assessment development would constitute a single source posting.
Other threshold requirements	Solicitations estimated to be over $150,000 must be approved by the Department of Management Services, Office of Supplier Diversity prior to posting with a maximum of 21 days for approval. The Commissioner must approve use of the RFP and ITN. The Commissioner must approve the evaluation team for RFPs in excess of $150,000 and evaluation and negotiation teams in ITNs. The Chief Technology Officer must approve information technology and communications solicitations and purchases.

A2-4: SUMMARY STATEMENTS OF SUPPORT

Florida's successful implementation of our RTTT plan is dependent upon leveraging the proffered support of our committed stakeholders. As evidenced by the sheer number and diversity of our education stakeholders letters of support (over 85), Florida is poised for success. Florida's RTTT application is student centric. Every proposed initiative and action is ultimately focused toward improving student performance.

Leaders and teachers cannot effectuate the reform in each classroom envisioned by Florida's plan without support from parents and guardians (Florida PTA), teachers (Florida Education Association), and our educational leaders (Florida School Boards Association, Florida Association of District School Superintendents, Florida Association of School Administrators). Additionally, research has consistently and continually reported that state-level leadership is also needed to implement meaningful systemic education reform. Florida has provided evidence that its state leadership including our Congressional delegates, Governor Crist, President of the Senate, Speaker of the House of Representatives, Legislative Education Committee Chairs, the State Board of Education, and the Commissioner of Education are committed to meeting the goals of our RTTT application. Finally, without our business and higher education community leaders embracing our plan and working collaboratively to help ensure that every student is career- and/or college-ready Florida's proposed goals could not be attained.

Florida's RTTT application stakeholder letters of support translate into stakeholder commitment and action when called upon to meet the goals of our grant application.

Florida's Leadership

As members of the *Florida Congressional Delegation*, we proudly support Florida's application submitted by Governor Charlie Crist for the federal RTTT competition Phase II. This important initiative provides an unprecedented opportunity to further Florida's ongoing education reform efforts and implement bold, forward-thinking strategies designed to strike at the heart of effective teaching to improve student learning. Florida's fourth-place ranking in Phase 1 of Race to the Top demonstrated the State's commitment to quality teachers and leaders, superior standards and assessments, a world class data system and a renewed focus on struggling schools. The Phase II application is essential to strengthening our schools and ensuring Florida's success. Our students deserve the best learning environment and teachers possible, and Florida's Phase II application will help us have the best opportunity for success for Florida's students. The proposal contains ambitious, innovative reforms that could serve as a model for education reform nationally in the upcoming ESEA reauthorization.

We, as members of *Florida's Congressional Delegation*, are joining together to support and endorse our state's application. Florida is uniquely positioned to succeed. We are a state committed to providing an excellent education for all students and continually strategizing ways to meet the needs of our lowest performing students. A working group was created to ensure more input from school districts teachers, and parents. The changes suggested by this group have garnered more vigorous support from stakeholders and their representatives, including local teachers and PTAs, and this Congressional delegation. We strongly support Florida's application to Race to the Top and encourage this award on behalf of our state's deserving students.

U.S. Representative Kathy Castor, strongly supports Florida's Race to the Top application. Governor Crist created a working group comprised of teachers, schools boards, superintendents, the Florida Education Association, the PTA, state legislators, and educational non-profits. The result is a collaborative Race to the Top application that aims to improve student achievement. Florida is committed to providing an excellent education for all students, particularly our lowest performing students.

Florida's Attorney General, Bill McCollum, certified that the FDOE's application accurately reflects current law. Additionally, he is proud of the progress Florida has made in raising student achievement among all segments of our population, and is pleased to support our efforts to secure RTTT grant dollars to go even further in transforming Florida's education system. With the collaboration of Florida's teachers, parents, students, school boards, teacher unions, and business leaders, this plan will accelerate reform, enhance student achievement and enable our children to have a world-class education system to compete globally.

The President of the Senate and Speaker of the House of Representatives, Speaker Designate, and Respective Education Committee Chairs express their combined support for Florida's efforts to apply for, and win the federal RTTT competition. During our most recently concluded Legislative Session, the Legislature passed legislation that increased standards for graduation and created a more proximate relationship between student achievement and teacher compensation. We continue to support these initiatives and are pleased to see that all the parties involved in preparing and submitting this latest application have embraced these concepts as well. The key assurances of this competition focus on areas that we consider to be the utmost importance in the advancement and success of our children and align well with our own state education goals. By concentrating on great teachers and leaders, high quality standards and assessments, a world class data system and our struggling schools, we can produce bold and effective strategies that will redefine the work going on in our classrooms and reinvigorate the learning experiences of every one of our students

Incoming Senate President, Mike Haridopolos, wants to ensure Florida's schools continue to thrive. If we receive Race to the Top funding I am confident our students will continue to make tremendous improvements. We will also be able to dedicate more resources to our lowest-achieving schools and improve the effectiveness of teachers and principals. I am eager to help in any way possible.

Charter Schools Associations

The *Florida Charter School Alliance, Inc.* supports the FDOE's application for the second competition for the Race to the Top federal grant funds. The parallel goals of the FSCA and the FDOE's RTTT plan would foster a synergized collaboration aimed at creating meaningful and lasting reform in Florida in Florida's schools, through the expansion of quality school choice options and the establishment of exemplars of educational excellence. It is with our shared vision for the success of Florida's schools that the FCSA fully endorses the FDOE's application for RTTT grant funding.

The *Florida Consortium of Public Charter Schools* supports Florida's RTTT grant. The Florida Consortium of Public Charter Schools is recognized as one of the most influential and cutting edge Associations in the country. Started in 1998 by a small group of grass roots operators, FCPCS has grown to over 282 schools representing over 90,000 students. It is our goal to participate in the RTTT grant should Florida receive the award.

The *Florida Network of Public Charter Schools (FNPCS)* supports the FDOE's application for RTTT federal grant funds. The parallel goals of the FNPCS and FDOE's RTTT plan would foster synergized collaboration aimed at creating meaningful and lasting reform in Florida's schools, through the expansion of quality school choice options and the establishment of exemplars of educational excellence. It is our shared vision for the success of Florida's schools that the FNPCS fully endorses the FDOE's application for RTTT grant funding.

State and local leaders

The *Associated Industries of Florida*, the AIF board of directors and the thousands of employers we represent, wholeheartedly support the state's efforts to compete for and win federal RTTT funding. AIF applauds your work to improve the quality of teachers in Florida's classrooms, for we know the best tool for turning around low performing students is a high quality teacher.

The *Florida Association of District School Superintendents* supports Florida's efforts to secure a RTTT grant. We are very supportive of the collaborative efforts among all parties and feel that this collaboration has enriched Florida's application. We stand ready to provide further assistance during the next phase of this process.

The *Florida Association of Realtors* expresses strong support for the FDOE's RTTT grant application. Florida's young people deserve a high quality, cutting-edge education system to prepare them to compete in today's global economy. Commissioner, we stand with you in this amazing endeavor and we appreciate your vision. Together we will give Florida a brighter future.

The *Florida Association of School Administrators* supports Florida's RTTT application. FASA represents over 100,000 Florida school leaders at all levels. Our members clearly understand the leadership commitment required to successfully implement the ambitious goals outlined in our Race to the Top application and we stand ready to do our part. FASA is proud to support this application and we will do our part to deliver when the time comes.

The *Florida Board of Governors* is pleased to offer this letter of support for the FDOE's RTTT grant proposal, which lays out bold, historic steps that will help elevate K-12 education in Florida. The efforts will strategically address our state's greatest challenges while building on the significant achievements our system has already made.

The *Florida Chamber of Commerce* wholeheartedly supports the state's efforts to compete for and win this national competition. As we build on more than a decade of education reforms that continue to garner unprecedented student achievement…our efforts will deliver a learning environment that prepares our students for a vast and competitive global economy.

The *Florida Commission on Human Relations*, the state's civil rights agency, expresses strong support for the RTTT initiative and the need for Florida to be involved in this unique opportunity as one of the initial participants. The Commission supports the RTTT funding opportunity and believes it is in the best interest of Florida's children.

The *Florida Council of 100* fully supports Florida's RTTT application. The council is a private, nonprofit, nonpartisan organization of business leader, which exist to promote the economic growth of Florida and improve the economic well-being and quality of life of its citizenry. The council stands ready to help the state capitalize on this once-in-generation opportunity for Florida's students, teachers, and principals – the foundation of our 21st century economy.

The *Florida Education Association* thanks Governor Crist for his support and assistance to make Florida's application for Phase 2 of Race to the Top a true work of collaboration and a productive framework for how Florida can and should move the education reform agenda forward. As President of the Florida Education Association, I am committed to moving reform forward, helping each student move to a higher level of learning, and elevating eth teaching profession where teachers are compensated, evaluated, recognized and respected as professionals. I hope that my commitment and the commitment of Florida's teachers in helping to craft this application will position Florida not only at the top of educational reform, but as a model for deliberative conversations, sustainable funding along with focused and research based reforms that truly make a difference in helping all student learn. I am encouraged that the process used and the content included in this application will be considered seriously by the USDOE as it is analyzed for its boldness to advance education reform.

The *Florida Education Foundation*'s Board of Directors strongly supports Florida's RTTT funding application and stands ready, willing and able to assist as necessary to ensure that Florida receives the funding that our students so desperately need. The Florida Education Foundation is the Direct Support Organization of the FDOE.

The *Florida Education Fund* whose mission is to strengthen the, larger community by creating and implementing programs and services that lead to institutional enhancement and greater educational advancement for historically under-represented groups supports the FDOE's RTTT proposal without reservation.

The *Florida Energy Workforce Consortium* fully supports Florida's RTTT application. As an industry consortium laser-focused on the energy sector's workforce challenges, we know how critical student achievement is to the success of our energy workforce of the future and the success of Florida's economy.

The *Florida Philanthropic Network* as a statewide association of Florida grant making foundations who invest in the improvement of the quality of life of Florida citizens wishes to express support of Florida's efforts to participate in the federal RTTT competitive funding process. Florida's participation in RTTT would provide a powerful catalyst to the state's private philanthropic efforts around education.

The *Florida School Boards Association, Inc.* endorses and supports Florida's efforts to participate in the RTTT programs as proposed by USDOE. The funding and innovations in this program are fully supported by our Association and the majority of school boards throughout the State. Our partnership will ensure that this program will be communicated effectively to all school districts and are more than willing to assist in all efforts to make Florida the model for the nation.

Florida Tax Watch wholeheartedly supports the state's efforts to compete for and win this national competition. Our state's economic and financial future depends on a skilled and highly-trained workforce. The students of today represent the community leaders, business owners and entrepreneurs of tomorrow.

The *Foundation for Florida's Future* supports the FDOE's application for the $4.6 billion competitive grant program, RTTT, from the USDOE. More than a decade of bold reforms has demonstrated Florida's unwavering commitment to transforming the quality of education. The success of the state's RTTT has the potential to shape the future of education in our nation.

The Greater Fort Lauderdale/Broward Economic Development Alliance supports Florida's RTTT program funding request. Today's students will be the business owners, managers and community leaders of tomorrow and it is imperative they be ready to compete with other businesses and communities around the world if Florida is to succeed.

Gulf Power Company offers their continued support of the FDOE's efforts to raise the educational achievements of our state's students through this RTTT application.

Indiantown Western Martin County Chamber of Commerce fully supports the state's application for federal funding.

The *Southern Poverty Law Center* has worked to improve state juvenile justice systems throughout the South. This work has led us to the schools, due to inappropriate and ineffective school discipline practices that adversely impact the number of children referred to the juvenile justice system. To that end, we were pleased to see the USDOE's inclusion of Positive Behavioral Interventions and Supports and school climate issues in the final RTTT guidelines and even more pleased when the FDOE chose to make this program part of its RTTT application. We support Florida's RTTT application and look forward to our continued work together.

Space Florida wishes to express its wholehearted support with regard to the FDOE's submission for RTTT. Space Florida supports the FDOE in its targeted expansion of science, technology, engineering and mathematics (STEM) opportunities for all Florida students.

STEMFlorida's mission is to make Florida a leader in market relevant STEM talent development and retention. We stand in support of the RTTT vision and the action to make a more effective educational system a reality for Florida's students.

Stuart/Martin County Chamber of Commerce supports the FDOE's effort to win this national competition. We are confident this program will provide our teachers the resources to provide our students with the necessary skills to succeed.

The *Upper Tampa Bay Regional Chamber of Commerce* expresses strong support to Florida's submission for a RTTT grant. There is no question that our children are this state's and this nation's most precious resource and that we need to take very possible step to provide them the opportunity for a successful path in an increasingly global economy. RTTT is a tool tat we must put in the kit to do this.

Workforce Florida, Inc. commends the Department of Education for its commitment to improving and transforming the way students learn in our state. We stand in support of this unprecedented opportunity to make the vision for a more effective education system a reality for Florida's students.

Parent, Student and Community Organizations

The *Consortium of Florida Education Foundations*, which represents 54 county 501c3 non-profit education foundations, recognizes Florida's application for RTTT funding as once-in-a generation opportunity to bring transformative, positive changes to public education in our state and offer its full support.

The *Florida After School Network*, a non-profit organization invested in the future wellbeing of our children and our state, expresses overwhelming support for Florida's efforts to participate and ultimately triumph in the federal RTTT competition. Our mission is to ensure that every child has high-quality after school opportunities that are accessible, affordable, accountable and inclusive. An opportunity like this is too valuable to waste and it's going to take a combined effort by every one of us if we are to win this competition.

The *Florida PTA*, the largest child advocacy organization in Florida with over 325,000 members, is pleased to express support for Florida's efforts to participate, and ultimately triumph in the federal RTTT competition for Phase II. The Florida PTA Executive Committee will encourage parents to work with their children and schools to ensure that the rigorous student achievement goals of RTTT will be met by the end of the grant period. We recognize the value of this opportunity and understand that it will take a combined effort by every one of us if we are to win this competition. The Florida PTA is excited by the possibilities that the RTTT represents for our children and our state. Please accept our wholehearted support for your efforts as we work to make Florida a part of this momentous event.

The *Florida State Conference NAACP Branches,* a non-profit civil rights organization, expresses overwhelming support for Florida's efforts to participate, and ultimately triumph in the federal RTTT competition. Our state's prosperity depends largely on the successful outcome of our children, and the ability of our schools and communities to develop purposeful thinkers and leaders who are driven to succeed.

Institutions of Higher Education

Broward College supports Florida's RTTT program funding request. In Florida, education sectors at all levels are partnering with each other and the business community. What better reassurance or recognition for these successes than the RTTT award which would provide the much needed additional resources required implementing and complementing the goals?

Broward College, Educator Preparation Institute proudly supports the State of Florida's RTT program funding request. Florida's Strategic Plan has laid the foundation for educational reform goals to Strengthen Foundational Skills, Improve College and Career Readiness, Improve the Quality of Teaching, and Improve K-12 Educational Choice Options. Broward College's Educator Preparation Institute stands ready to support the RTTT vision.

Central Florida Community College enthusiastically lends support to the FDOE to procure the RTTT grant.

Central Florida Community College's Educator Preparation Institute supports Florida's RTTT application. Our collaboration benefits students in Florida's K-12 school system. We commit to support and to adhere to the principles of the State's RTTT application that pertain to teacher preparation in an alternative certification program,

Chipola College is pleased to support the Florida grant proposal, RTTT. I have every expectation that the grant will improve student achievement in this state and serve as s a model for other states.

Daytona State College supports the FDOE's application for RTTT funding. Daytona State College commits to support the FDOE as it pursues educational excellence through the RTTT grant program.

Edison State College offers their strong support for the FDOE's proposal for RTTT. Building upon the strong foundation of experience and dedication within our state, I am confident the State of Florida can exceed the expectations within the RTTT program.

Edward Waters College, Department of Teacher Education/Center for Urban Education is an enthusiastic partner with the FDOE in the RTTT grant proposal. We believe that this innovative opportunity will assist the state and this college with preparing, recruiting, retaining and compensating the most effective teachers and leaders.

Florida Agricultural and Mechanical University is very pleases to provide this letter of support for Florida's RTTT Initiative. The Florida Agricultural and Mechanical University is in an excellent position to provide strong and continuous support for Florida's RTT Initiative.

Florida Atlantic University provides strong support for the FDOE's RTTT application. We see multiple opportunities to leverage this potential funding and historically strong partnership relationships to improve student learning from pre-kindergarten years through graduate students across the state.

Florida Gulf Coast University is pleased to support the FDOE's application for RTTT funding. It is Florida Gulf Coast's intent to assist and support our public school partners who participate in RTTT initiatives.

Florida International University supports Florida's strategic plan for garnering a federal RTTT grant. The plan promotes the importance of higher education and career readiness for our students and will develop a wide range of preparedness and professional development programs for our teachers.

The *Florida Institute of Technology's Department of Science and Mathematics* has considerable expertise and experience in STEM education and look forward to supporting initiatives outlined in the FDOE's RTTT proposal.

Florida Keys Community College provides full support for the FDOE in order to be able to continue to build upon a decade of tremendous improvements that have transformed our public education system into a national model of advancement. At the heart of RTTT is improving student learning and achievement. The areas targeted in this plan will assure that graduates have bright futures and are ready to enter college or the workforce.

Florida State College at Jacksonville with great enthusiasm supports Florida's grant application to the USDOE for RTTT. We look forward to working with our local school districts and FDOE in implementing these far reaching plans to improve student achievement, college and career readiness.

Gulf Coast Community College, Educator Preparation Institute supports Florida's RTTT application. The state of Florida is prepared to move forward to implement rigorous standards and assessments, within an assessment system, that will improve every facet of educational system. Florida's RTTT provides an opportunity for all educational partners to work toward this common vision.

Hillsborough Community College offers their support to the FDOE's RTTT grant proposal. The RTTT grant will enable the state to continue to increase student achievement throughout all of K-12 and ultimately all of education with continued implementation of rigorous standards and assessment supported by a culture of evidence.

Indian River State College supports the FDOE's RTTT application and looks forward to partnering with them in any way possible to ensure statewide educational success. Students in the state of Florida deserve a world class, cutting edge education system to compete in today's global economy and RTTT can, and will, be the catalyst that delivers this to them.

Jacksonville University fully supports the FDOE's application for funding via the RTTT grant. This grant will vastly impact the ability for all collaborative partners to improve the delivery of education at every facet of our educational system in Florida.

The *Jacksonville University, School of Education*, fully supports the FDOE's application for funding via the RTTT grant. This grant will vastly impact eh ability for all collaborative partners to improve the delivery of education at every facet of our educational system in Florida.

Lake City Community College is most supportive of your efforts, ideas and therefore, your application for the money to begin putting your plan into effect. We appreciate the steps you are taking and realize the results will show a significant and positive impact on the students, the educational institutions, and therefore, the entire State of Florida.

Lake Sumter Community College commends the FDOE for this well planned, research based approach to achieving the RTTT goals. Florida's proposes a bold and ambitious plan that builds upon the foundation of innovation and improvement in Florida's public schools while honestly addressing our weaknesses as well. Please know that you can count on our institution to support our local school districts in their efforts to improve student success through the sorely needed resources this grant will provide.

Miami Dade College supports Florida's application for an FDOE RTTT grant. It is imperative that we be able to recruit and retain highly qualified teachers in the STEM disciplines who will ignite student's passion and interest, and prepare them to graduate from high school ready for rigorous postsecondary experiences in these disciplines.

New College of Florida extends their full support for the full support for the FDOE's RTTT grant proposal. The progressive design of this proposal surely promises to strengthen our corps of dedicated teachers and school leaders and enhance school achievement.

North Florida Community College supports Florida's RTTT initiative. Our college stands ready to do its part in this historic moment when Florida becomes a national and world leader in preparing its children for success.

Northwest Florida State College fully supports the proposal. Florida's RTTT application outlines an integrated approach to improve every facet of the education system. This is a truly remarkable proposal that, in my judgment, could have a significant impact on our students.

Palm Beach Community College notes that it is a distinct pleasure to offer our support for the Florida RTTT application. We stand ready to be an active partner as Florida's education system "races to the top".

Pasco-Hernando Community College supports the FDOE's application for RTTT funding. We recognize and value our role with the Hernando County and Pasco County School Districts and would endeavor to enhance our collaboration even further if Florida receives this unique funding opportunity.

Pensacola Junior College offers enthusiastic support to Florida's RTTT application. As we continue to contribute to the ling-term intellectual and economic potential of both the region and the state, through innovative and affordable means to maximize student success and workforce productivity, we are fully committed to Florida's RTTT initiative implementation.

Polk State College's Educator Preparation Institute supports the State's RTTT application. The Institute will commit to the principles of the State's RTTT application and ensure that the principles that are applicable to alternative certification programs are implemented at Polk State College.

South Florida Community College offers support for the RTTT grant application. Much can be achieved through cooperation and strong partnerships between schools and colleges working together, and we stand ready to offer our commitment to achieve these ends.

St. Petersburg College stands ready to assist as we strive to provide our students with quality education and tools for success.

State College of Florida wholeheartedly supports the FDOE's grant request for RTTT. State College of Florida agrees with the mission of the FDOE's endeavor and is proud to support it in any manner.

The Florida State University is excited to support FDOE's application and looks forward to working together to best serve the needs of the state. You will have our full support in proceeded with this application, we will do all we can to assist you in the continuing development of an outstanding program should you be awarded the grant.

The *University of Central Florida* strongly supports the state of Florida's application for RTTT. The proposal's emphasis on the STEM disciplines supports the highly effective programs we have developed in partnership with the National Science Foundation and with the state of Florida to recruit, retain, and graduate students in science, technology, engineering and mathematics.

The *University of Central Florida's, College of Education* is committed to collaborate with the FDOE and LEAs in achieving the goal of improving student performance through the judicious use of state and federal resources provided by RTTT.

The *University of Florida* supports the State of Florida's application for RTTT. We support the vision and goals of the application because they will result in a more educated citizenry capable of building a stronger economy and enjoying a higher quality of life. RTTT offers a clear path to realize that goal, and we look forward to participating in its implementation.

The *University of Florida, College of Education* believes that Florida's application for federal funding through the RTTT initiative is a welcomed opportunity to engage various stakeholders throughout the state in improving student achievement outcomes through attracting, preparing, retaining, and supporting excellent teachers and school leaders.

The *University of Miami, School of Education* is pleased to offer its support, not only to the FDOE, but to our LEA as well, the Miami-Dade County Public Schools. The University of Miami School of Education is proud to ally itself with the state and the LEA to assist in the realization of this important and vital vision.

The *University of North Florida* offers full support for the RTTT grant application. There is no doubt that improving education in Florida requires the state to recruit, prepare and retain a host of talented and dedicated education professionals.

The University of West Florida stands ready to assist the FDOE in the implementation of the ambitious goals set out by the administration of the RTTT. The Commissioner of Education and the FDOE have the capability to coordinate all levels of education throughout the state of Florida to achieve solid partnerships to be successful in this endeavor.

The University of West Florida, Educator Preparation Institute, is pleased to support the FDOE's RTTT grant proposal. Today, the state of Florida serves as one of the leaders in creating various models to prepare highly qualified teachers and has provided an open door for alternative pathways to teaching.

The *University of South Florida* enthusiastically supports Florida's RTTT proposal. Educators, policy makers, community leaders and philanthropic organizations have come together in support of educational reforms that will restore America's rightful place as the world leader in educational attainment rates. Please know that our words of support are backed by a sincere offer of assistance.

University of South Florida's, College of Education supports Florida's application for the federal Race to the Top funds. The College of Education at USF St. Petersburg is committed to preparing exemplary teachers and other educational personnel for roles in a diverse and changing society. The state's plan for Race to the Top is consistent with these goals and for ensuring the highest standards for Florida's teachers and principals and the children they serve.

A3-1: Florida School Choice Options

Florida Continues to Lead the Nation

April 2009

FLORIDA DEPARTMENT OF EDUCATION

Improving K-12 Educational Choice Options

Production of this publication was a cooperative effort between
the Office of Independent Education and Parental Choice
and
the Bureau of Public School Options, K-12 Public Schools
in the Florida Department of Education.

For additional information about school choice options,
call the toll-free School Choice Hotline at:

(800) 447-1636

Detailed information about the school choice options described in this document is available on the Department of Education Web site at:

http://www.floridaschoolchoice.org/
and
http://www.fldoe.org/flbpso/

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"Supporting school choice options is a valuable way for families and their communities to work together to create the educational setting the best suits the needs of their children. School Choice is a key component to any successful education system"

— Commissioner of Education, Dr. Eric J. Smith

"Choice is a catalyst for change. By providing the benefits of a tailored learning experience for students, school choice provides parents access to opportunities for their children to thrive and succeed."

— Chairman of the State Board of Education, T. Willard Fair

FLORIDA: LEADING THE NATION IN SCHOOL CHOICE OPTIONS

School choice is a key component in helping to ensure high academic achievement for all of Florida's children. Florida continues to be in the forefront of innovation in providing school choice options for families. Access to these diverse school environments and programs empowers parents as they become managers of their children's education. Opportunities in school choice continue to grow, and an increasing number of families are taking advantage of their right and responsibility to select the learning environment that will help their children thrive.

Adopted in 1996, Florida's A+ Education Plan spurred the creation of policies and programs that thrust Florida into the spotlight as a national leader in providing school choice options. A key principle of the plan is for every student to gain a year's worth of knowledge in a year's time. If the schools that students are assigned to attend cannot provide this, parents should be free to choose another school that best meets the learning needs of their children.

Florida's State Board of Education has adopted six Strategic Areas of Focus as part of a long-range planning effort to improve Florida's educational system. One of the areas, ***Improve K-12 educational choice options,*** places a priority on giving families greater choice in quality educational opportunities. Support for this initiative, coupled with Florida's groundbreaking legislation, results in choice programs and resources that continue to expand to meet the needs of families. These programs allow children to get the education they deserve while simultaneously providing an incentive for innovation and improvement across the educational system.

Thousands of families and students benefit from school choices in Florida. Over the last four school years, almost one-fourth of Florida's K-12 public school students have attended a school other than the one to which they were assigned according to school district attendance zones. While school district enrollment for the 2008-09 school year has not been finalized, initial data show a slight increase in the percentage of families using school choice options.

K-12 Student Participation in Florida's School Choice Options

Year	Total K-12 Public School Student Membership	Number of Students Attending Schools Based on Parental School Choice Options	Percent of Students Attending Schools Based on Parental School Choice Options
2007-08	2,652,684	645,184	24%
2006-07	2,946,463	667,115	23%
2005-06	2,901,455	656,988	23%
2004-05	2,912,326	645,442	22%

School choice is not about one type of school being better than another. It is about letting parents who know the personality, strengths, and weaknesses of their child make the decision about how and where their child will be educated. School choice is the right thing to do for children and a good thing to do for schools. Ultimately, school choice improves education for all children.

Florida's emphasis on providing numerous school choice options for families and students is based on three basic principles:

- **Every student has different learning needs so there is no one best school for everyone**
- **Diversity in school structure and programs is necessary to accommodate all students and enable them to succeed**
- **Students will achieve more if they and their parents or guardians have freely chosen a learning environment.**

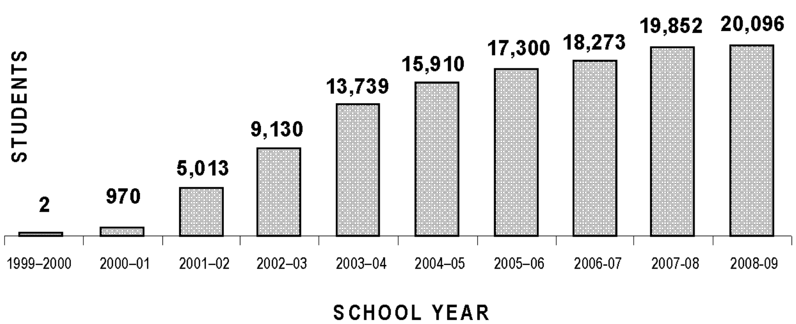
SCHOLARSHIP PROGRAMS

Florida's variety of school choice options includes scholarship programs, giving parents choices so that their children are offered the best opportunities to learn. Florida's three scholarship programs allow parents unprecedented choice among public and private schools. During the current 2008-09 school year, more than 44,000 students are participating in a scholarship program.

John M. McKay Scholarships for Students with Disabilities Program

The John M. McKay Scholarships for Students with Disabilities Program, commonly known as the McKay Scholarship Program, offers parents of students with disabilities the opportunity to make informed choices about the best academic environment for their children. Eligible students include students with disabilities who have an Individual Education Plan (IEP), and who were enrolled and reported for funding by a Florida school district the year prior to applying for a scholarship. Students in military families from other states or countries may also be eligible. Parents have the option of choosing another public school or applying for a scholarship for their child to attend an eligible private school.

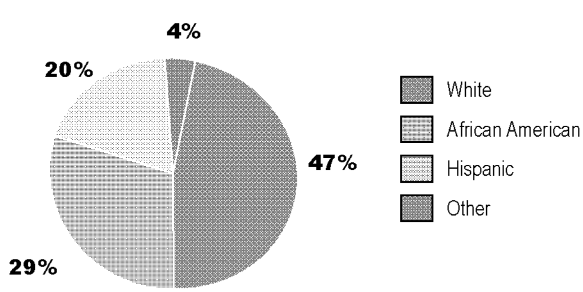
Student Participation in the McKay Scholarship Program



*Note: 2008-09 data based on the McKay Scholarship Program February 2009 Quarterly report.

Almost half of all students participating in the McKay Scholarship Program in 2008-09 are white. African American students represent the second largest student group with 29% participation, followed by Hispanic students with 20% participation.

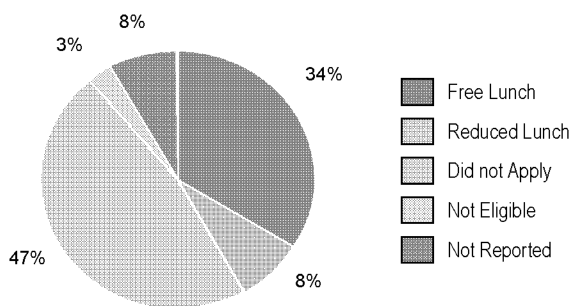
Race/Ethnicity of McKay Scholarship Students, 2008-09



Grade Level Distribution of McKay Scholarship Students2008-09

Grade	Students	Percent
K	333	1.7%
1	567	2.8%
2	833	4.1%
3	1,170	5.8%
4	1,626	8.1%
5	1,746	8.7%
6	2,265	11.3%
7	2,419	12.0%
8	2,331	11.6%
9	1,910	9.5%
10	1,839	9.2%
11	1,606	8.0%
12	1,451	7.2%
Total	**20,096**	**100.0%**

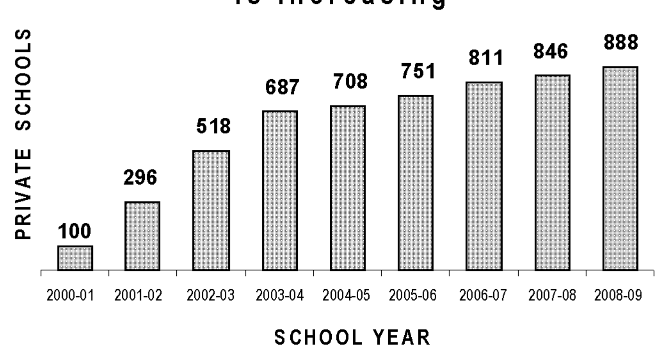
McKay Scholarship Student Eligibility for Free & Reduced-Price Lunch 2008-09



Of students receiving McKay scholarships in 2008-09, 31% are enrolled in kindergarten through grade five, 35% in grades six through eight, and 34% in grades nine through twelve. Slightly over two-thirds (69%) of the McKay scholarship students are male. Forty-two percent (42%) are eligible for the federal free and reduced-price lunch program, an indicator that their families have limited financial resources.

The McKay Scholarship Program offers parent-directed choices and student-directed funding. During the 2007-08 school year, the most recent complete year of funding, $131.3 million was paid to scholarship program participants. Scholarships for individual students enrolled during the 2007-08 school year ranged from $5,160 to $21,769, with an average scholarship amount of $7,295. Currently for the 2008-09 school year, 888 private schools are participating in the McKay Scholarship Program. Private schools participating in the program must document compliance with eligibility requirements specified in law.

Private School Participation in the McKay Scholarship Program is Increasing

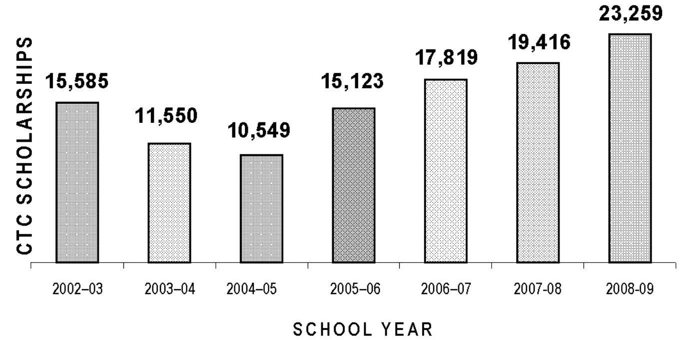


Corporate Tax Credit Scholarship Program

The Corporate Tax Credit Scholarship Program was established to encourage private, voluntary contributions from corporate donors to non-profit scholarship funding organizations that award scholarships to children from low-income families. Under this program, which the state legislature passed in 2001, corporations can receive a dollar-for-dollar tax credit up to 75% of their state income tax liability, and the state may award a maximum of $118 million in credits for the 2008-09 fiscal year. This program expands educational opportunities and school choice for children of families that have limited financial resources.

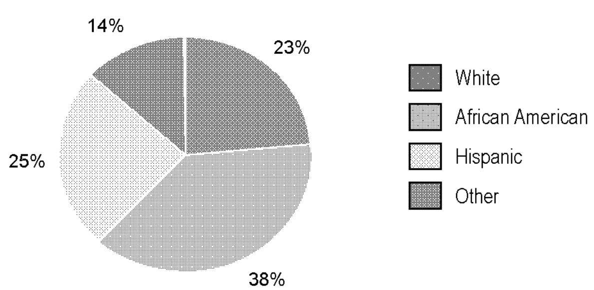
Scholarship payments for over 23,200 students were made in February 2009. Current participation in 2008-09 reflects an eight percent (8%) increase in enrollment from the 2007-08 school year.

Corporate Tax Credit Scholarship Student Participation



*Note: 2008-09 data based on the Corporate Tax Credit Scholarship Program February 2009 Quarterly Report.

Race/Ethnicity of Corporate Tax Credit Scholarship Students 2008-09



Approximately 38% of students participating in the Corporate Tax Credit Scholarship Program in 2008-09 are African American. Hispanic students comprise the next largest population with 25% participation, followed closely by the white population with about 23% participation.

Students are eligible for a scholarship if they qualify for free or reduced lunch and have either attended a public school the previous year, received a scholarship the previous year, or are entering kindergarten or first grade.

Scholarship Funding Organizations and Private Partners

Scholarship Funding Organizations (SFOs) are responsible for the receipt and distribution of corporate funds to eligible and participating private schools in Florida. The scholarships to attend an eligible private school are worth $3,950 or the cost of tuition plus books and transportation, whichever is less. Scholarships to attend a public school in an adjacent district are worth $500 per student for transportation.

Currently for the 2008-09 school year, four SFOs and 988 private schools are participating in the Corporate Tax Credit Scholarship Program.

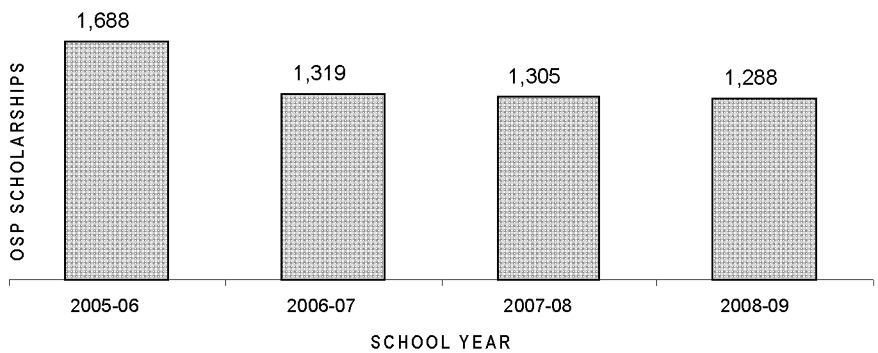
Opportunity Scholarship Program – Public School Option

The Opportunity Scholarship Program (OSP) created under Florida's A+ Education Plan reflects the state's commitment to higher educational standards for students. The Opportunity Scholarship Program allows parents to choose a higher-performing public school if their children attend, or are assigned to attend, a failing Florida public school.

For the purpose of the Opportunity Scholarship Program, a school is considered to be failing if it has received two "F" grades within four consecutive school years. In the year in which the school receives a second "F," eligible students can take advantage of the options under this program. The Opportunity Scholarship becomes available to students at a public school when that school has received two "F" grades within four school years, including the current year.

Historically, the public school option of the Opportunity Scholarship Program has been administered at the school district level. Since the 2005-06 school year, school districts have reported the number of students in their districts participating in the Opportunity Scholarship Program. Of the 1,288* students currently participating in the public option of the Opportunity Scholarship Program for the 2008-09 school year, 94% are enrolled in grades 9-12.

Opportunity Scholarship Program
Public School Option Student Participation



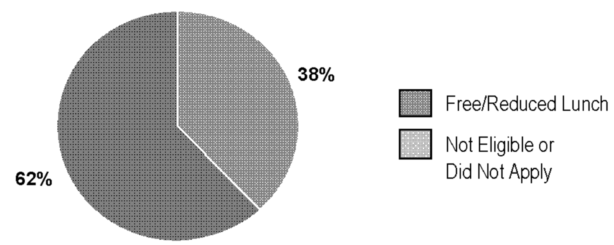
Note: 2008-09 Survey 2 Data as of 1/30/09.

CHARTER SCHOOLS

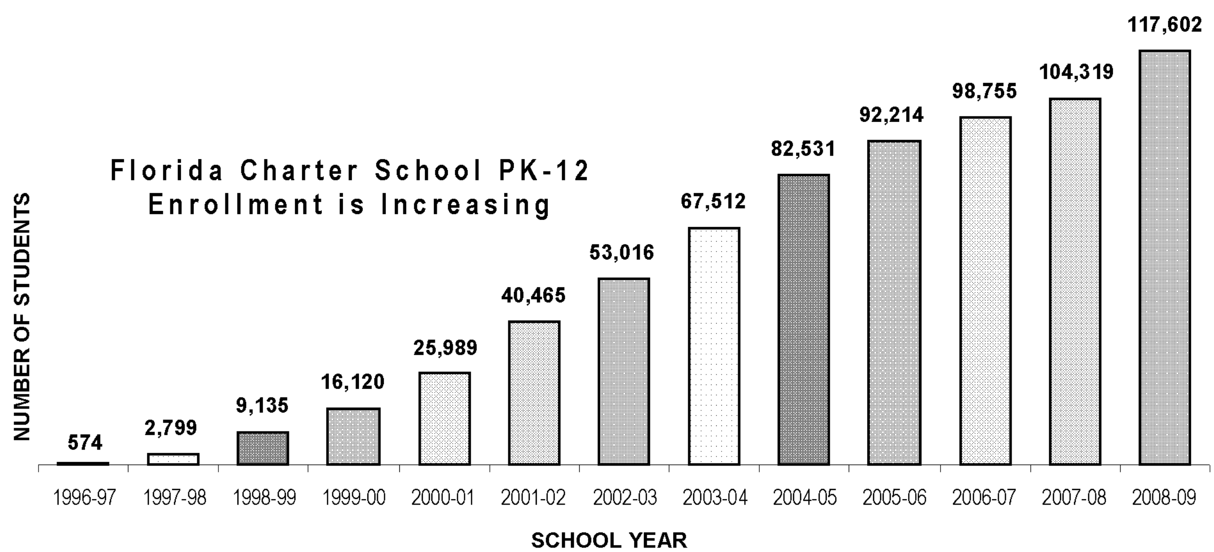
Charter schools are public schools that are independently operated and committed to academic achievement. Since 1996, charter schools have played a key role in increasing parental options in public education and providing innovative learning opportunities for Florida students. With 389 charter schools currently operating during the 2008-09 school year, Florida has the fourth highest number of charter schools in the nation. From schools specializing in the performing arts to focusing on technical training, Florida's charter schools cover the spectrum of educational needs.

Florida's charter schools strive to provide parents with smaller classes, alternative curriculum and more chances for parental involvement. While authorized and financially supported by local school districts, charter schools are largely free to provide innovative education, and often provide more effective programs and choices to underserved groups of students. Over 117,000 students currently attend charter schools in Florida.

Charter School Student Eligibility for Free and Reduced-Price Lunch

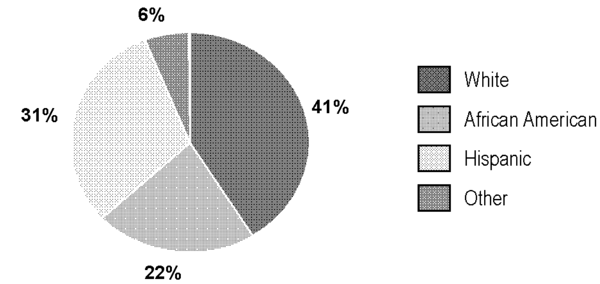


Approximately 38% of students that attended charter schools are eligible for the free and reduced-price lunch program for the 2008-09 school year.



Forty-one percent (41%) of students enrolled in charter schools in the current 2008-09 school year are white. Hispanics represent the next largest population with 31% participation, followed by African Americans with 22% participation.

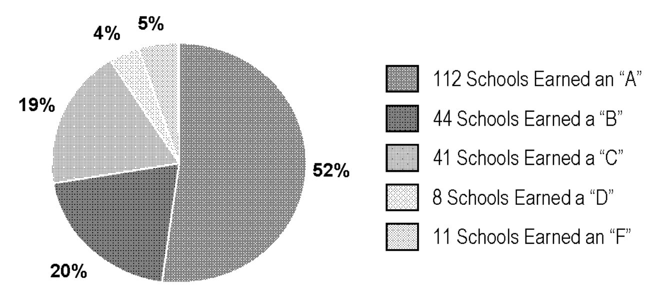
Race/Ethnicity of Charter School Students 2008-09



Charter Schools Measuring Up to the Challenge

In 2007-08, 128 out of 320 (40%) charter schools that were assigned an Adequate Yearly Progress (AYP) status met all the criteria for AYP, as compared to 664 out of 2,985 (22%) traditional public schools that were assigned an AYP status. Seventy-two percent of the 216 operating charter schools that were graded for the 2007-08 school year earned a school performance grade of "A" or "B."

Charter School Performance Grades



Charter Technical Career Centers

The State of Florida has three charter technical career centers with a total enrollment of 8,970 students for the 2007-08 school year. These centers and their sponsors are:

- Advanced Technology College (ATC) – Daytona State College
- First Coast Technical College (FCTC) – St. Johns County School Board
- Lake Technical Center (LTC) – Lake County School Board

The charter technical career centers provide comprehensive and innovative technical education programs, services, and customized training to meet the needs of citizens, business, and industry.

Charter technical career centers aim to develop a competitive workforce using a training and education model reflective of marketplace realities. The career centers offer a continuum of career educational opportunities using a school-to-work, tech-prep, technical, academy, and magnet school model to provide career pathways for lifelong learning and career mobility and to enhance career and technical training.

A charter technical career center may be formed by creating a new school or converting an existing school district or community college program to charter technical status. The center operates under a charter granted by a district school board, a community college board of trustees, or a consortium of one or more district school boards and community college boards of trustees.

VIRTUAL EDUCATION

Florida Virtual School:

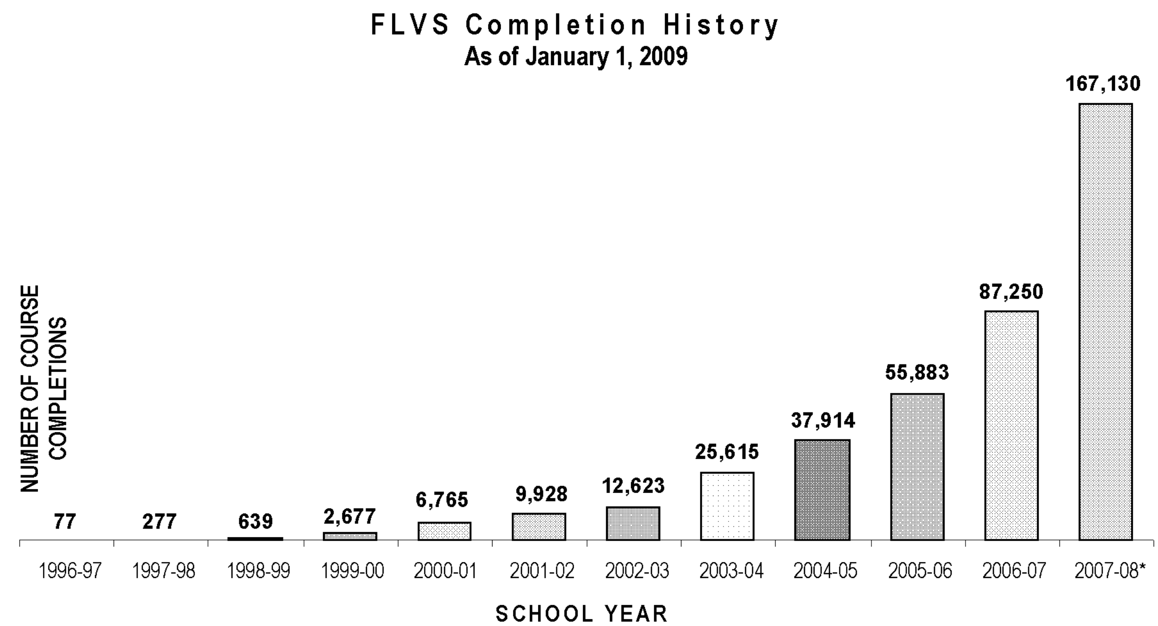
Any Time, Any Place, Any Path, Any Pace

Florida has led the way with groundbreaking legislation that makes online learning possible and fundable. The Florida Legislature initially funded the Florida Virtual School (FLVS) as a grant-based pilot project in 1997, pioneering Florida's first Internet-based, public high school. Since 2001, the FLVS has functioned as a special independent public school district governed by a Board of Trustees appointed by the Governor.

FLVS currently offers a full high school and middle school curriculum with more than 90 online courses which include everything from general and honors courses to 10 Advanced Placement (AP) courses. These courses are free to Florida students, including public, charter, private, and home-educated students.

In 2009, FLVS began developing elementary courses that will be used in both a blended model and individually with students. These courses are under construction and will be available in the near future. FLVS is fully accredited by two major agencies: the Southern Association of Colleges and Schools (SACS) and the Commission on International and Trans-Regional Accreditation.

Parents of FLVS students were surveyed in the spring of 2008 to determine satisfaction with their child's virtual school experience. Over 91% of the parents surveyed rated the overall quality of their child's experience with the FLVS as excellent or good, and 83% believed that their child learned more or the same through virtual school courses than in traditional high school courses. Only 4% thought they learned less. Ninety-two (92%) percent of parents would encourage their child to take other FLVS courses.

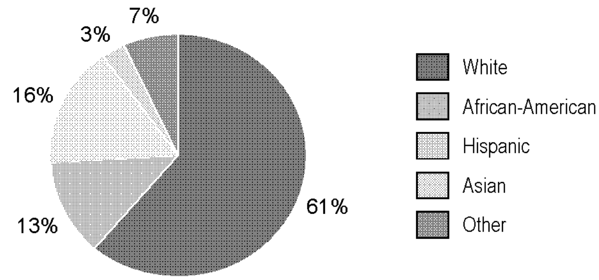


*FLVS completions are measured as half-credit enrollments based on student activations during a 12-month period.

2007-08 completions are based on a 16-month period.

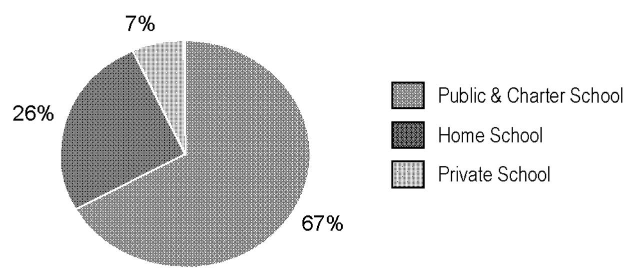
Almost 58% of the students enrolled at FLVS during 2007-08 were female. A majority (61%) of the students enrolled were white. Hispanics represent the next largest minority student population with 16% participation, followed by African-American students with 13% participation.

Race/Ethnicity of FLVS Students2008-09



The majority (67%) of students enrolled in the Florida Virtual School are public school students. Approximately 26% are home-educated students and 7% are enrolled in private schools.

FLVS Student Participation by School Type, 2008-09



K-8 Virtual School Programs:

Combining the Best of Home and Public Education

The K-8 Virtual School Program allows eligible K-8 virtual schools to provide an online education program to full-time students in kindergarten and grades one through eight. Two schools, Florida Connections Academy (FCA) and Florida Virtual Academy (FVA), are currently participating in this state-level program. However, new legislation passed by the 2008 Legislature requires school districts to operate a full-time K-8 virtual instruction program beginning in 2009-10. Therefore, only returning students are able to participate in the state-level programs until the transition to district programs is complete.

School District Virtual Instruction Program

The 2008 Florida Legislature created the School District Virtual Instruction Program which requires school districts to offer a full-time virtual instruction program for students in grades K-8 and a full- or part-time virtual program for grades 9-12 students in Department of Juvenile Justice (DJJ) programs and dropout prevention programs beginning in the 2009-10 school year. School districts may offer these programs beginning with the 2008-09 school year.

FLORIDA'S VOLUNTARY PUBLIC SCHOOL CHOICE PROGRAM

The Florida Department of Education (DOE) was awarded a grant under the 2007 Federal Voluntary Public School Choice (VPSC) Program. This grant assists the DOE and school districts in creating, expanding, and improving public school choice opportunities in Florida. The VPSC Program aims to strengthen the availability, accessibility, and equity of educational options for parents to secure a high-quality education for their children.

One focus of the grant is to expand public school choices through the use of interdistrict agreements in which students from lower performing schools can transfer to higher performing schools across district boundaries.

The DOE is working closely with Hillsborough, Polk, Palm Beach, and Monroe counties to implement transfer agreements for students. The University of South Florida's Alliance for Applied Research in Education and Anthropology (AAREA) will be collecting and analyzing achievement data for students who take part in the interdistrict agreements.

A second focus of the grant is to reach out and educate parents, especially families in low-income areas, about all choice options available to them. To meet this objective, DOE has partnered with NOVA Southeastern University to maintain 8 School Choice Parent Resource Centers (SCPRC) and open an additional 5 Centers over the next 4 years of the grant. The SCPRCs assist families with the paperwork required to transfer their students to higher performing schools.

Additionally they offer information and assistance about all school choice options available to parents. They provide workshops for parents at the Centers and on-site in lower performing schools.

The DOE has created a School Choice Parent Advisory Council (SCPAC) to support the outreach to parents initiative. The SCPAC's mission is to develop and implement strategies so that "All Florida parents will be informed of all educational options and opportunities." Members are appointed by the Commissioner of Education and include parents, school district choice personnel, and representatives of parent organizations such as, but not limited to, Parent Teacher Associations (PTA) and the Florida Parental Information and Resource Center (FLPIRC).

Florida continues to support and promote School Choice, and this grant represents another step in developing high-quality educational choice and in educating parents so they can make the best decision for their children.

Florida School Choice Parent Resource Centers:

- **North Parent Resource Center**
- **Fresh Ministries—Eastside Jacksonville Neighborhood Resource Center**
- **Cuban American National Council**
- **The Resource Room**
- **Gadsden School District/Mobile PRC**
- **South Parent Resource Center**
- **Miami-Dade District Parent Resource Center**
- **Sant la Haitian Neighborhood Center**
- **Compassionate Hearts – Serving Hands, Inc.**
- **Institute for Child & Family Health (ICFH)-All Aboard PRC**

Controlled Open Enrollment

The Florida Legislature recognizes the value of an educational system that provides numerous and meaningful options for students and their parents. In order to promote parental involvement in the school selection process, Florida enacted legislation in 1996 requiring each district school board to develop a plan providing for a controlled open enrollment public education delivery system. These systems allow school districts to make student school assignments using parents' indicated preferential school choice as a significant factor. In requiring each school district to develop an open enrollment choice plan, the Legislature expressed the belief that public school choice will:

- Cultivate constructive competition
- Serve as an impetus for academic improvement
- Foster greater accountability within the school system

Each district school board may offer controlled open enrollment within the public schools in addition to the existing choice programs such as magnet schools, alternative schools, special programs, advanced placement, and dual enrollment. Controlled open enrollment emphasizes the rights for families to choose among existing public schools. Instead of being assigned to a public school by a school district based on attendance zones, parents may choose a school from anywhere within the district or, if not geographically feasible, from within established zones or boundaries within the district.

To ensure that school districts comply with legislative requirements and to evaluate the voluntary implementation of controlled open enrollment throughout the state, the Department of Education created a reporting format that requires school districts to collect and report data regarding educational choice options. School districts report student data for educational choice each August via the state's Automated Student Information Data Base. As reported for the 2007-08 school year, over 323,000 students in 47 of the state's 67 school districts, or about 12% of the total number of students enrolled in the state, attended a Florida public school through the districts' controlled open enrollment program.

Other Public School Options

Various options are used across Florida to respond to the unique learning needs of every school district's students and communities. The most common form of public school choice is offering a variety of courses and electives to meet graduation requirements for high school and allowing students to select the courses that will best meet their learning needs. Among the other choice options being implemented by districts used to meet student and parental needs are magnet schools, career and professional academies, and intensive nationally and internationally recognized instructional programs.

Magnet Schools

Magnet schools are public schools with a particular theme or academic focus on topics such as medical, criminal justice, science and mathematics, technology, performing arts, International Baccalaureate, and foreign languages. Magnet schools provide parents and students with the option of choosing a school that matches a student's interests. They are designed to attract a variety of students and sometimes enroll students from different districts. Magnet schools offer students specialized programs and create innovative learning approaches in a diverse environment. More than 345,000 students participated in over 340 magnet schools or magnet programs in 24 Florida school districts during the 2007-08 school year.

Career and Professional Academies

Career and Professional Academies are small, personalized learning communities within a high school that select a subset of students and teachers for a two-, three-, or four-year span. Students enter a career and professional academy through a voluntary process. They must apply and be accepted with parental knowledge and support.

- A career and professional academy includes the following essential elements:
- A small learning community
- A rigorous academic curriculum with a career theme
- Partnerships with employers, the community, and higher education

By design, these three central elements of a career and professional academy lead to a school that is rigorous, relevant, and relational. Academies draw on the interest students have in learning about some feature of the world of work and integrate career-specific curriculum and instruction into core academic curriculum. Over 240 career and professional academies operate in 38 Florida school districts with a focus on areas including hospitality and tourism, health science, science and technology, information technology, and architecture and construction.

Dual Enrollment

Dual enrollment allows eligible high school students to enroll in postsecondary courses. They earn credit toward high school graduation and at the same time earn credit toward a college degree or technical certificate. All 28 public community and state colleges and some state universities in Florida participate in dual enrollment. Students are permitted to take dual enrollment courses on a part-time basis during school hours, after school, or during the summer term. Dual enrollment students do not have to pay registration, matriculation, or laboratory fees.

Advanced Placement (AP) Program

The College Board's Advanced Placement (AP) Program is a nationwide program consisting of more than 30 college-level courses and exams offered at participating high schools. Subjects range from art to statistics. Students who earn a qualifying grade of 3 or above on an AP exam can earn college credit or advanced placement or both, depending on the college or university. Students in Florida's public secondary schools enrolled in AP courses do not have to pay to take the exams.

Advanced International Certificate of Education (AICE) Program

The Advanced International Certificate of Education (AICE) Program is an international curriculum and examination program modeled on the British pre-college curriculum and "A-Level" exams. Florida's public community colleges and universities provide college credit for successfully passed exams. Students in Florida's public secondary schools enrolled in AICE courses do not have to pay to take the exams.

The International Baccalaureate (IB) Diploma Program

The International Baccalaureate (IB) Diploma Program is a rigorous pre-university course of study leading to internationally standardized tests. The program's comprehensive two-year curriculum allows its graduates to fulfill requirements of many different nations' education systems. Students completing IB courses and exams are eligible for college credit. The award of credit is based on scores achieved on IB exams. Students can earn up to 30 postsecondary semester credits by participating in this program at the high school level. Approximately 40 Florida high schools participate in the IB program. Students in Florida's public secondary schools enrolled in IB courses do not have to pay to take the exams.

NO CHILD LEFT BEHIND SCHOOL CHOICE

The federal No Child Left Behind (NCLB) Act of 2001 is designed to ensure that children have a fair, equal, and significant opportunity to obtain a high-quality education. The legislation provides federal resources for students to reach proficiency levels on challenging state academic standards and assessment. Under NCLB, when schools do not meet state targets for improving the achievement of all students, parents are provided options for meeting their child's learning needs.

Parents whose children are enrolled in Title I schools that are identified in need of improvement, corrective action, or restructuring have the opportunity to transfer their children to a higher-performing public school. If they do so, the local school district must provide transportation.

Parents of students enrolled in schools in need of improvement, corrective action, or restructuring may also have the opportunity for their children to receive supplemental educational services (SES). These services include tutoring and other academic enrichment services provided outside the regular school day and designed to enable children from low-income families to reach academic proficiency. SES tutoring offers eligible students the opportunity to participate in high-quality research-based educational programs in subject areas such as reading, language arts, and mathematics. Eligible families choose an SES provider from a state-approved list, and school districts pay for the tutoring services using federal funds.

Public school choice is a critical component of NCLB that can provide students in low-performing Title I schools with the opportunity to obtain a high-quality education. When students are provided quality educational options, and when parents receive information to make informed choices among those options, public school choice can increase both equity and quality in education.

Public School Choice with Transportation and Supplemental Educational Services

	Title I Schools in Florida	Public School Choice with Transportation	Supplemental Educational Services
2004-05	**1,426**	• Approximately 900 Title I schools did not make Adequate Yearly Progress (AYP) for two years and were required to offer parents public school choice with transportation.	• 33 Title I schools did not make AYP for three years and were required to offer SES.
2005-06	**1,386**	• Approximately 300 Title I schools did not make AYP for two years and were required to offer parents public school choice with transportation.	• Approximately 700 of Title I schools did not make AYP for three or more consecutive years and were required to offer SES.
2006-07	**1,382**	• 1,001 Title I schools did not make AYP for two or more years and were required to offer parents public school choice with transportation.	• 872 Title I schools did not make AYP for three or more consecutive years and were required to offer SES. • School districts reported that approximately 70,000 students participated in SES.
2007-08	**1,365**	• Approximately 990 Title I schools did not make (AYP) for two years and were required to offer parents public school choice with transportation.	• 892 Title I schools did not make AYP for three or more consecutive years and were required to offer SES. • School district reported that approximately 70,000 students participated in SES.

HOME EDUCATION

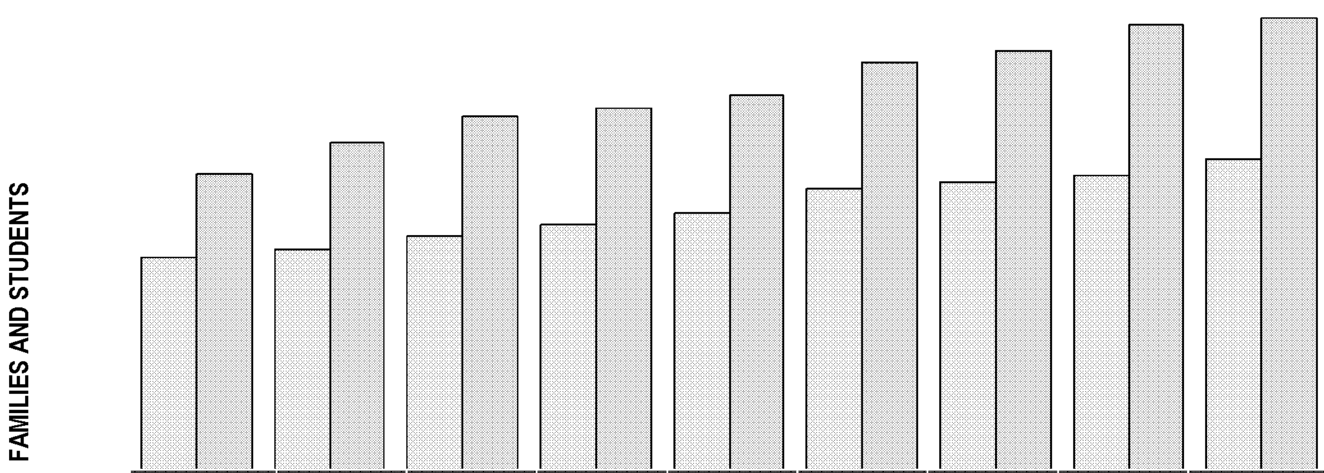
Florida is a long-time supporter of home education and the number of families choosing this education option shows steady growth. Established as an educational choice by the Florida Legislature in 1985, home education programs give parents the freedom to nurture their child's individual learning style, creativity and intellect and allows students the opportunity to learn and explore at their own pace, in any location or at any time of the day. More than 56,600 students in 39,100 Florida families, representing every school district and county, were registered in home education programs in the 2007-08 school year.

Florida law does not require a particular educational background for parents or standard curricula for home-educated students. Parents home educating their children are able to customize the curriculum to the needs of each child.

However, a portfolio of records and materials showing student work must be maintained for two years and made available to the school district if requested in writing. There is no attendance requirement for home education students, as the learning environment is not restricted to a regular classroom setting. The law allows parents the flexibility to choose from five annual evaluation methods, enabling them to select the best measure of learning for each student.

Parents register a home education program with their school district, providing the names, addresses and birthdates of all children who are enrolled in a home education program. Home education students may participate in dual enrollment and are eligible for Florida Bright Futures Scholarships. Children of all ages are home educated across the state, and some enter college straight from their courses of study at home.

Growth in Home Education Programs 1999-2008



	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
Families	26,656	27,792	29,41 7	30,89 2	32,166	35,37 7	36,14 9	36,939	39,100
Students	37,19 6	41,128	44,460	45,33 3	47,151	51,11 0	52,61 3	55,822	56,650

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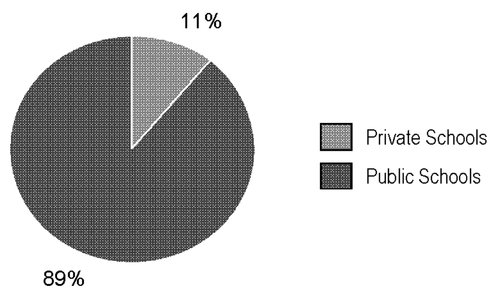
PRIVATE SCHOOLS

More than 335,200 students were enrolled in 2,185 private schools in Florida during the 2007-08 school year. This represents approximately 11.2% of the state's total student enrollment in Prekindergarten programs through grade 12.

PK-12 Public and PrivateSchool Enrollment 2007-08



Each private school has a stated purpose and philosophy unique to that school. Some private schools place an emphasis on college preparation, some are vocational, and others seek to meet the needs of children with particular learning styles. These schools operate with limited regulation by the state, but Florida law does require private schools to meet certain standards in regards to health, safety and sanitation.

Each private school is required by Florida law to complete an annual survey that is maintained by the Department of Education as an information database for the public, governmental agencies, and other interested parties. The state is not required to verify the accuracy of the information submitted and inclusion in the database does not imply state accreditation or approval. The Department of Education and the state's private school organizations work together in serving Florida's diverse student population; the relationship is professional, rather than regulatory.

CONCLUSION

Florida's school choice programs provide unique flexibility for parents, giving families greater choice in educational opportunities. Studies show that school choice programs can increase student achievement and parental satisfaction. Diversity in school structure and programs is crucial to Florida's goal of bringing all students to high levels of academic achievement. Constructive competition and greater accountability provide an incentive for all schools to improve.

While Florida leads the nation in school choice options, there is still much to be done. The highest priority is to improve the quality of all choice programs while educating and empowering parents to make the best educational choices for their children.

School Choice Benefits for Families and Students

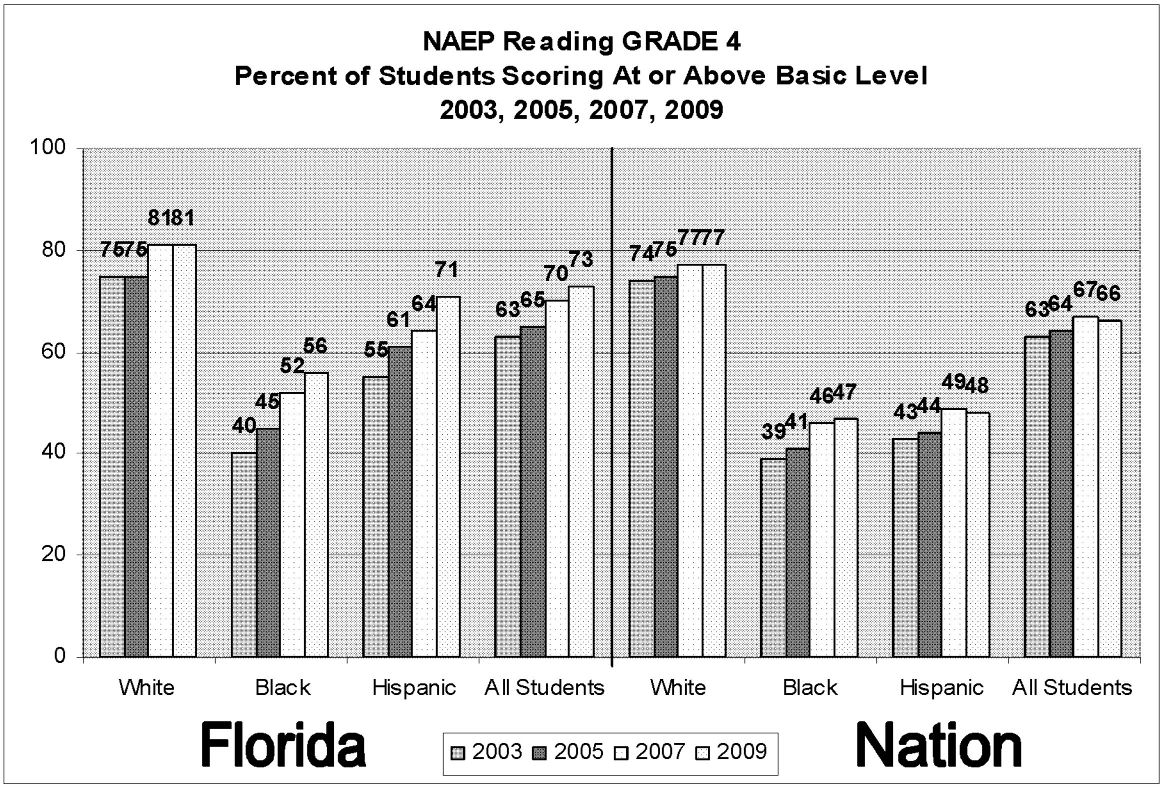
- **Promotes increased student achievement**
- **Increases parental involvement**
- **Promotes school improvement through constructive competition**
- **Provides greater accountability within the school system**

Florida Department of Education
Eric J. Smith, Commissioner
http://www.fldoe.org

SCHOOL CHOICE
Florida Department of Education

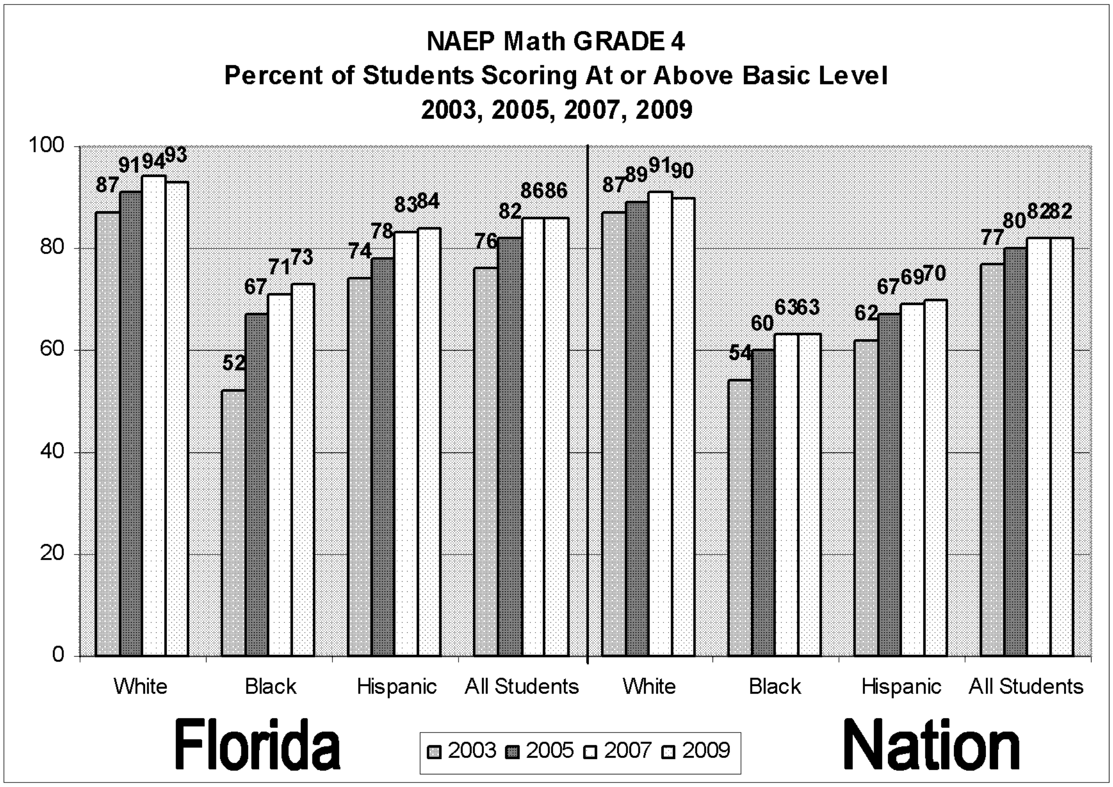
Office of Independent Education and Parental Choice
325 West Gaines Street, Suite 522
Tallahassee, FL 32399-0400
850/245-0502
800-447-1636 Toll-Free Hotline
www.floridaschoolchoice.org

A3-2: NAEP HISTORIC SUBGROUP DETAIL



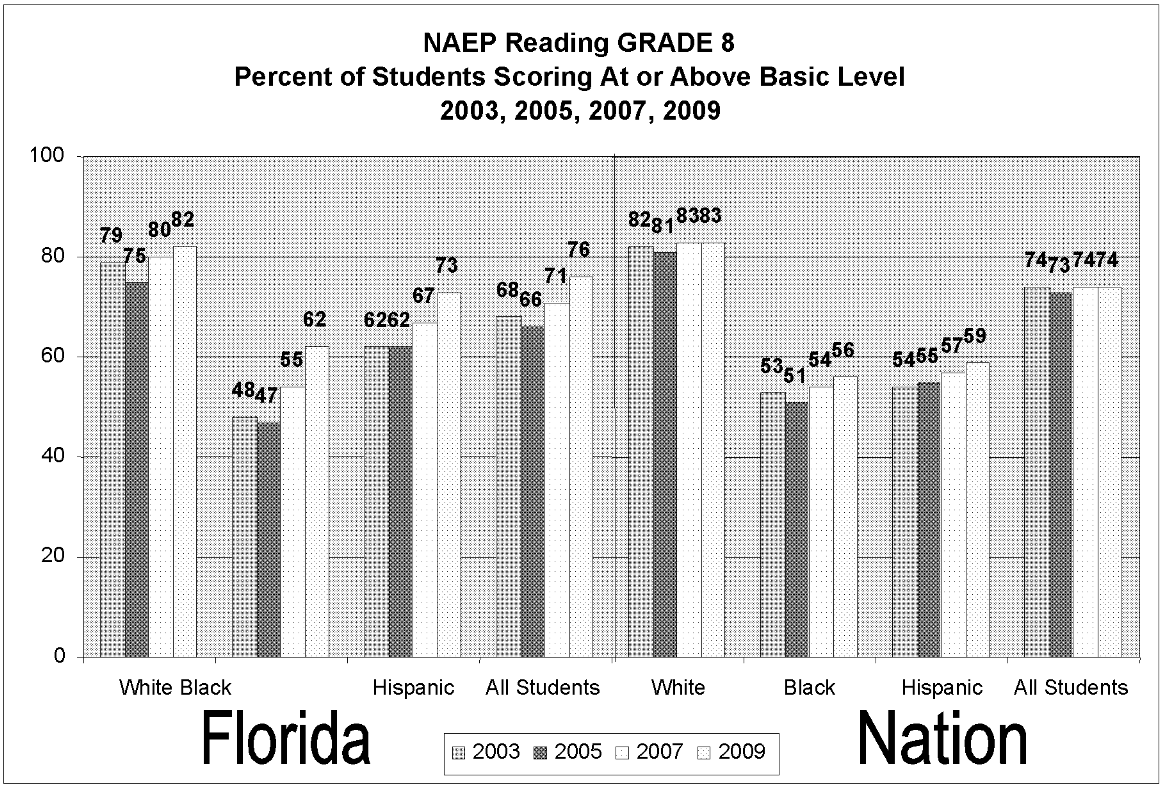
NAEP GRADE 4 READING									
	All White		Black	Hispanic	SD FRL		ELL	Female	Male
2003	63 75		40	55	28 49		43	67	58
2005	65 75		45	61	38 53		32	67	62
2007	70 81		52	64	38 59		38	75	66
2009	73 81		56	71	45 64		52	77	70

Source: http://nationsreportcard.gov



NAEP GRADE 4 MATH								
	All White	Black	Hispanic	SD FRL		ELL	Female	Male
2003 76	87	52	74	50	63	62	75	76
2005 82	91	67	78	67	74	57	81	83
2007 86	94	71	83	63	79	64	86	87
2009 86	93	73	84	72	80	69	86	86

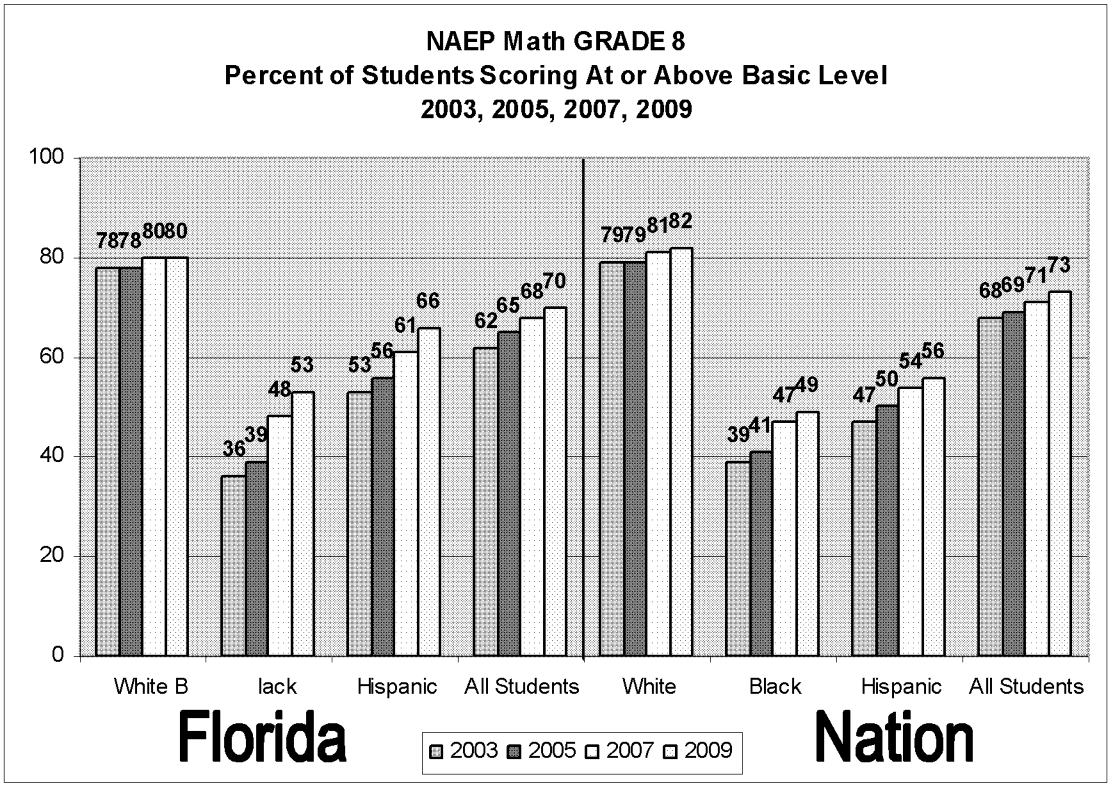
Source: http://nationsreportcard.gov



NAEP GRADE 8 READING

	All White		Black	Hispanic	SD	FRL	ELL	Female	Male
2003	68	79	48	62	29	55 34 74			61
2005	66	75	47	62	34	56 27 73			59
2007	71	80	55	67	36	61 40 78			66
2009	76	82	62	73	45	67 41 81			71

Source: http://nationsreportcard.gov



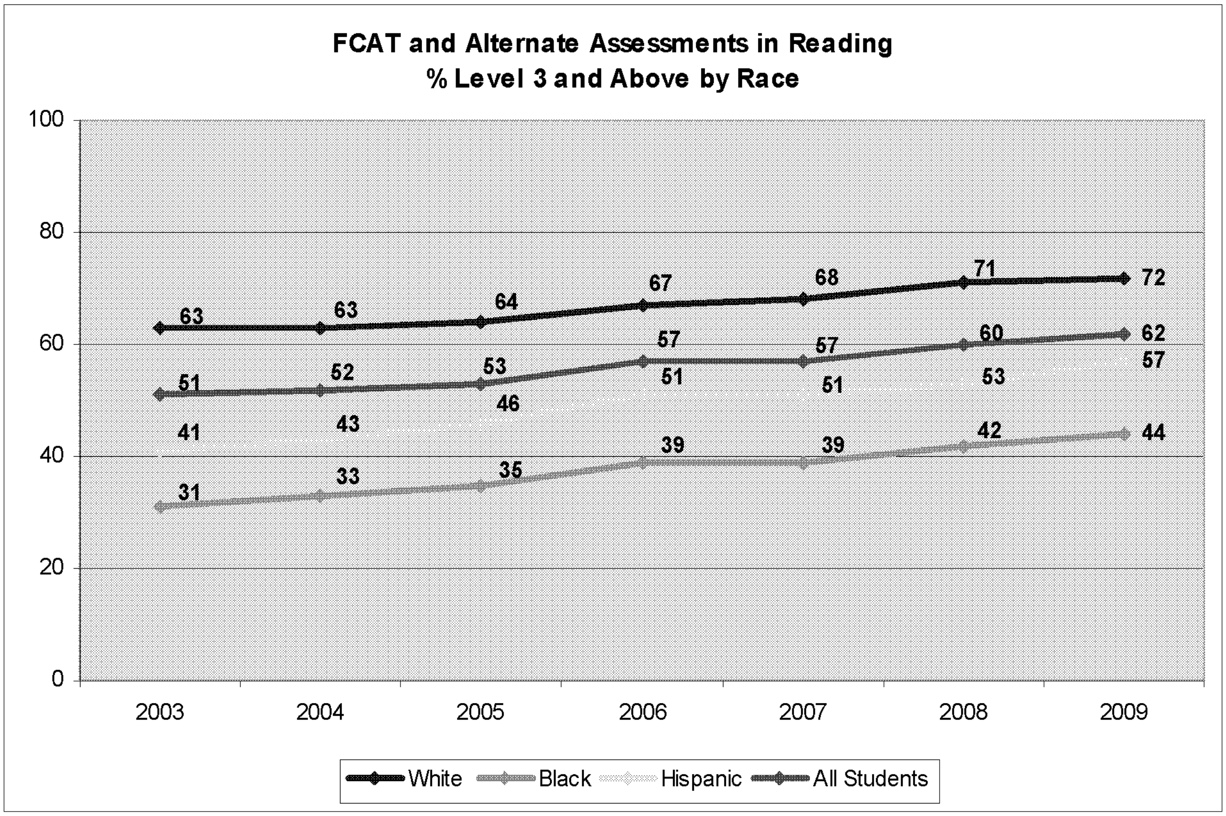
NAEP GRADE 8 MATH									
	All White		Black	Hispanic	SD FRL		ELL	Female	Male
2003 62		78	36	53	24	45	22	59	64
2005 65		78	39	56	37	50	30	63	67
2007 68		80	48	61	34	55	28	68	68
2009 70		80	53	66	39	59	30	69	71

Source: http://nationsreportcard.gov

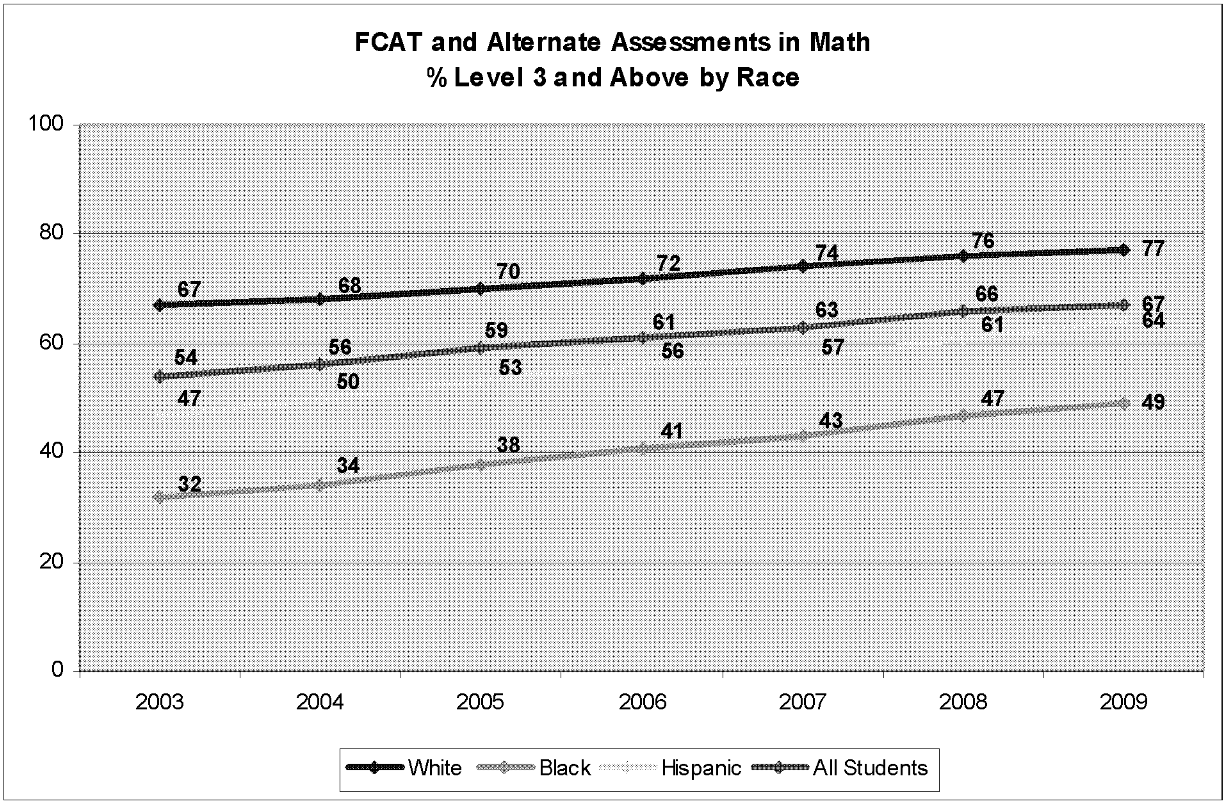
NAEP Grade 4 Reading, % of Students Scoring At or Above Proficient				
	2003	2005	2007	2009
All Students	32%	30%	34%	36%
White 42%		39%	44%	45%
African-American 13%		13%	16%	18%
Hispanic 24%		25%	28%	31%
SWD 10%		14%	12%	17%
Not SWD	35%	33%	37%	39%
FRL 18%		19%	22%	25%
Not FRL	45%	42%	46%	49%
ELL 15%		7%	12%	13%
Not ELL	33%	32%	35%	37%
Female 35%		33%	38%	39%
Male 29%		28%	30%	33%
NAEP Grade 4 Mathematics, % of Students Scoring At or Above Proficient				
	2003	2005	2007	2009
All Students	31%	37%	40%	40%
White 43%		49%	54%	53%
African-American 8%		16%	15%	20%
Hispanic 27%		28%	33%	33%
SWD 13%		24%	18%	26%
Not SWD	35%	39%	44%	43%
FRL 16%		22%	25%	29%
Not FRL	46%	53%	55%	55%
ELL 16%		15%	16%	19%
Not ELL	33%	38%	42%	42%
Female 29%		35%	38%	39%
Male 33%		38%	43%	42%

NAEP Grade 8 Reading, % of Students Scoring At or Above Proficient				
	2003	2005	2007	2009
All Students	27% 28%		28%	32%
White	37% 33%		36%	40%
African-American	11% 11%		13%	15%
Hispanic	19% 21%		23%	27%
SWD	4% 9%		7%	11%
Not SWD	30% 27%		31%	35%
FRL	15% 17%		17%	21%
Not FRL	35% 32%		36%	42%
ELL	6% 5%		7%	7%
Not ELL	28% 26%		29%	33%
Female	32% 30%		34%	37%
Male	21% 20%		22%	27%
NAEP Grade 8 Mathematics, % of Students Scoring At or Above Proficient				
	2003	2005	2007	2009
All Students	23% 26%		27%	29%
White	34% 36%		37%	39%
African-American	7% 8%		11%	13%
Hispanic	16% 16%		21%	22%
SWD	5% 13%		8%	8%
Not SWD	26% 28%		30%	32%
FRL	11% 13%		16%	18%
Not FRL	34% 36%		37%	40%
ELL	2% 4%		6%	4%
Not ELL	25% 27%		28%	30%
Female	21% 23%		26%	27%
Male	26% 28%		29%	31%

A3-3: FCAT HISTORIC SUBGROUP DETAIL



FCAT and Alternate Assessments in Reading % Level 3 and Above								
	2003 2004	2005		2006	2007	2008	2009	% Change from 2003 to 2009
All	51 52	53		57 57	60	62		11
White	63 63	64		67 68	71	72		9
Black	31 33	35		39 39	42	44		13
Hispanic	41 43	46		51 51	53	57		16
Asian	64 65	68		71 72	75	77		13
Am. Indian	55 55	58		61 62	64	66		11
Multiracial	64 65	65		67 67	68	70		6
SWD*	24 26	28		30 31	34	36		12
FRL	38 40	42		46 46	48	52		14
ELL**	15 30	32		36 35	37	42		27
Migrant	24 27	30		33 34	36	40		16
Female	53 54	55		60 60	62	64		11
Male	49 50	51		54 55	58	59		10



FCAT and Alternate Assessments in Math % Level 3 and Above								
	2003	2004	2005	2006	2007	2008	2009	% Change from 2003 to 2009
All	54	56	59	61	63	66	67	13
White	67	68	70	72	74	76	77	10
Black	32	34	38	41	43	47	49	17
Hispanic	47	50	53	56	57	61	64	17
Asian	76	78	81	82	83	85	86	10
Am. Indian	59	61	63	66	68	71	72	13
Multiracial	62	64	65	67	68	70	71	9
SWD*	25	27	30	32	33	38	39	14
FRL	39	42	46	48	50	54	57	18
ELL**	26	38	40	43	44	47	51	25
Migrant	31	35	39	42	44	49	53	22
Female	54	56	59	61	62	66	67	13
Male	55	57	59	62	63	66	68	13

A3-4: STATE ASSESSMENT OF SWD AND ELL; EXCEPTION FROM NAEP

Grade 4	Participation Rate for Students with Disabilities	Participation Rates for English Language Learners
Math 2003	88	83
Math 2005	88	83
Math 2007	87	80
Math 2009	90	95
Reading 2003	81	77
Reading 2005	75	70
Reading 2007	75	59
Reading 2009		

Grade 8	Participation Rate for Students with Disabilities	Participation Rates for English Language Learners
Math 2003	87	78
Math 2005	85	80
Math 2007	83	79
Math 2009	87	91
Reading 2003	75	69
Reading 2005	78	61
Reading 2007	81	47
Reading 2009		

NAEP 2010 Operational (Paper-Pencil) State-Specific English Language Learners (ELL) Guidelines Summary – Florida

The Florida Department of Education expects that most English language learners (ELL) will be included on the National Assessment of Educational Progress (NAEP) as follows:

- All English language learners who participate in the FCAT with or without accommodations should participate in NAEP.
- All English language learners who participate in the FCAT should participate in NAEP with appropriate accommodations.
- Only English language learners who have been enrolled in U.S. schools for less than 12 months may be excluded from any NAEP assessments. All other English language learners should participate in NAEP using appropriate accommodations.

Since some students may require accommodations in order to access the assessment and to better demonstrate their knowledge and skills, NAEP offers most of the accommodations that Florida allows on the state assessments. A student's English Language Proficiency Plan should not require revisions for the student to participate in NAEP. The following table should be used to determine allowable accommodations for English language learners in Florida. If an accommodation is not listed, please check with your District Assessment Coordinator to see if the accommodation can be provided on NAEP.

Several accommodations provided on the FCAT are not necessary for NAEP because of how it is administered. For example:

- Writes answers in test booklet: On NAEP, all students write responses in the assessment booklets, not on separate answer documents.
- Takes assessment over multiple days: NAEP is much shorter than the state assessments, so multiple-day testing is not offered. Students take two 25-minute subject matter blocks and answer survey questions about their educational experiences.

Please keep in mind that NAEP does not produce results for individual students or schools, like the FCAT. All results are summarized only at the national level. In other words, the NAEP assessments do not impose consequences for the student or the school, and are instead intended purely to provide a picture of educational performance and progress.

Accommodation	Subject	Accommodation Description	Allowed in State

Extended time	Geography, U.S. History, Civics, Writing, and Mathematics	This accommodation requires that students be given extra time to complete the assessment.	Yes
Small group	Geography, U.S. History, Civics, Writing, and Mathematics	Generally, a small group session includes no more than five students. A student can be assigned to a small group session because he/she requires one, or because one or more of the accommodations he/she typically requires must be administered in a separate session to minimize distractions to other students in the regular session.	Yes
Test items read aloud in English - occasional	Geography, U.S. History, Civics, Writing, and Mathematics	• For this accommodation, students may request to have words, phrases, or sentences read aloud to them in English.	No
Test items read aloud in English – most or all	Geography, U.S. History, Civics, Writing, and Mathematics	For this accommodation, students may request to have most or all of the assessment booklet read aloud to them in English.	No

Accommodation	Subject	Accommodation Description	Allowed in State
Breaks during test	Geography, U.S. History, Civics, Writing, and Mathematics	This accommodation requires that the student be allowed to take breaks as requested or at predetermined intervals during the assessment. This also could mean that the student is allowed to take the assessment in more than one sitting during a single day.	Yes
Bilingual dictionary without definition in any language	Geography, U.S. History, Civics, Writing, and Mathematics	This is a non-electronic bilingual dictionary provided by the school in any language that contains English translations of words but does not contain definitions. It is sometimes referred to as a "word-for-word" dictionary, "word-to-word translation dictionary," or a "bilingual word list."	Yes
General and/or subject specific directions read aloud in English	Geography, U.S. History, Civics, Writing, and Mathematics	For this accommodation students have the general directions (same for all students) and/or the subject-specific directions read aloud, repeated, or reworded in any way, in English, so that students understand what to do.	Yes
One-on-one	Geography, U.S. History, Civics, Writing, and Mathematics	This accommodation requires that a student is assessed individually in an area free of distractions.	Yes
Preferential seating, light, furniture	Geography, U.S. History, Civics, Writing, and Mathematics	This accommodation requires that a student sit in a designated area for the assessment, such as away from other students to limit distractions; a location where there is access to special equipment; or close to the front of the room so that a student can see or hear more easily. It may also include special lighting and furniture, such as a study carrel used by the student.	Yes

School staff administers	Geography, U.S. History, Civics, Writing, and Mathematics	This accommodation requires that a school staff member familiar to the student administer the session.	Yes
General directions read aloud in Spanish	Geography, U.S. History, Civics, Writing, and Mathematics	This accommodation requires that the general session script instructions be read aloud in Spanish. Session script directions are the same for all students.	Yes
Test items read aloud in Spanish	• Geography, U.S. History, Civics, Writing, and Mathematics	• For this accommodation, students may request to have words, phrases, or ~~sentences~~ read aloud to them in Spanish. This requires the student to use the bilingual Spanish/English booklet. Students who need subject-specific directions read aloud in Spanish will need this accommodation.	Yes, Words and phrases only
Spanish/English version of the test	Geography, U.S. History, Civics, Writing, and Mathematics	NAEP has bilingual Spanish/English booklets available for students who require them. When a bilingual booklet is open, one page has the directions and questions in Spanish, and the facing page will have the same directions and questions in English. Because of the size, the booklets are printed in a set of two. Students may mark their answers on either page and in either language.	No

NAEP 2010 Operational (Paper-Pencil) State-Specific Students with Disabilities (SD) Guidelines Summary – Florida

The **Florida Department of Education** expects that most students with disabilities (SD) and students on a Section 504 Plan will be included in the National Assessment of Educational Progress (NAEP) as follows:

- All students on a Section 504 Plan should participate in NAEP with or without appropriate accommodations.
- All students with disabilities that participate in the FCAT with or without accommodations should participate in NAEP.
- Most students with disabilities that participate in the FCAT should participate in NAEP with appropriate accommodations.
- Only students with disabilities that participate in the Florida Academic Alternate Portfolio may be excluded from any NAEP assessment.

Since some students may require accommodations in order to access the assessment and to better demonstrate their knowledge and skills, NAEP offers most of the accommodations that FCAT allows on the state assessments. A student's Individualized Education Program (IEP) or Section 504 Plan should not require revisions for the student to participate in NAEP. The following table should be used to determine allowable accommodations for students with disabilities in **Florida**. If an accommodation is not listed, please check with your District Assessment Coordinator to see if the accommodation can be provided on NAEP.

Several accommodations provided on the FCAT are not necessary for NAEP because of how it is administered. For example:

- Writes answers in test booklet: On NAEP, all students write responses in the assessment booklets, not on separate answer documents.
- Takes assessment over multiple days: NAEP is much shorter than the state assessments, so multiple-day testing is not offered. Students take two 25-minute subject matter blocks and answer survey questions about their educational experiences.

Please keep in mind that NAEP does not produce results for individual students or schools, like the FCAT. All results are summarized only at the national level. In other words, the NAEP assessments do not impose consequences for the student or the school, and are instead intended purely to provide a picture of educational performance and progress.

Accommodation	Subject	Accommodation Description	Allowed in State
Extended time	Geography, U.S. History, Civics, Writing, and Mathematics	This accommodation requires that students be given extra time to complete the assessment.	Yes
Small group	Geography, U.S. History, Civics, Writing, and Mathematics	Generally, a small group session includes no more than five students. A student can be assigned to a small group session because he/she requires one, or because one or more of the accommodations he/she typically requires must be administered in a separate session to minimize distractions to other students in the regular session.	Yes
Test items read aloud in English - occasional	Geography, U.S. History, Civics, Writing, and Mathematics	• For this accommodation, students may request to have words, phrases, or sentences read aloud to them in English.	Yes, but not for Reading
Test items read aloud in English – most or all	Geography, U.S. History, Civics, Writing, and Mathematics	For this accommodation, students may request to have most or all of the assessment booklet read aloud to them in English.	Yes, but not for Reading
Breaks during test	Geography, U.S. History, Civics, Writing, and Mathematics	This accommodation requires that the student be allowed to take breaks as requested or at predetermined intervals during the assessment. This also could mean that the student is allowed to take the assessment in more than one sitting during a single day.	Yes
Test items signed	Geography, U.S. History, Civics, Writing, and Mathematics	This accommodation requires that a qualified sign language interpreter at the school sign some or all of the test questions and answer choices for the student.	Yes, but not for Reading

Accommodation	Subject	Accommodation Description	Allowed in State
Responds in sign language	Geography, U.S. History, Civics, and Mathematics	This accommodation requires that students sign their responses to a qualified sign language interpreter provided by the school. The interpreter records the student's answers in the assessment booklet.	Yes
Presentation and response in Braille	Geography, U.S. History, Civics, Writing, and Mathematics	Presentation is a Braille version of the booklet. Response requires that a visually impaired student record his/her answers using a Braille output devise, a slate and stylus, an electronic Braille note taker provided by the school, or uses a scribe to record answers.	Yes
Large-print version of test	Geography, U.S. History, Civics, Writing, and Mathematics	NAEP provides large-print booklets to students who are visually impaired. These are assessment booklets that have been enlarged to 129 percent.	Yes
Magnification equipment	Geography, U.S. History, Civics, Writing, and Mathematics	This is a lens or system provided by the school that enhances visual function. Magnification devices include eyeglass-mounted magnifiers, free-standing or hand-held magnifiers, enlarged computer monitors, or computers with screen enlargement programs. Some students use closed-circuit television to enlarge print and display printed material with various image enhancements on a screen.	Yes
Responds orally to scribe	Geography, U.S. History, Civics, Writing, and Mathematics	This accommodation requires that the student respond orally to a scribe provided by the school or respond by pointing to his/her answers. The scribe then records the student's responses in the assessment booklet.	Yes
Responds using a computer or typewriter	• Geography, U.S. History, Civics, Writing, and Mathematics	• This accommodation requires that the student record his/her answers using a computer or typewriter provided by the school. *Note: Use of the spelling/grammar check function on a computer is NOT allowed.*	Yes
Uses a template to respond	Geography, U.S. History, Civics, Writing, and Mathematics	This is a cutout or overlay provided by the school that is used to focus a student's attention on one part of a page by obscuring other parts of the page.	Yes
Uses special writing tool	Geography, U.S. History, Civics, Writing, and Mathematics	• This is a large-diameter pencil, pencil grip, or other special writing tool provided by the school that a student uses to record his/her answers in the assessment booklet. *Note: Some students' IEPs/504 Plans stipulate that they should receive this accommodation. For those students, this will be coded as an accommodation. Students who do not have this as an IEP or 504 requirement, but who typically use large-diameter pencils, pencil grips, or other special writing tools during assessments may use these for NAEP, and it will not be recorded as an accommodation.*	Yes
General and/or subject-specific directions read aloud in English	Geography, U.S. History, Civics, Writing, and Mathematics	• For this accommodation students have the general directions (same for all students) and/or the subject-specific directions read aloud, repeated, or reworded in any way, in English, so that students understand what to do.	Yes

One-on-one	Geography, U.S. History, Civics, Writing, and Mathematics	• This accommodation requires that a student is assessed individually in an area free of distractions.	Yes
Preferential seating, light, furniture	Geography, U.S. History, Civics, Writing, and Mathematics	• This accommodation requires that a student sit in a designated area for the assessment, such as away from other students to limit distractions; a location where there is access to special equipment; or close to the front of the room so that a student can see or hear more easily. It may also include special lighting and furniture, such as a study carrel used by the student.	Yes
School staff administers	Geography, U.S. History, Civics, Writing, and Mathematics	• This accommodation requires that a school staff member familiar to the student administer the session.	Yes

B1-1: COMMON CORE STATE STANDARDS INITIATIVE MEMORANDUM OF AGREEMENT

The Council of Chief State School Officers and The National Governors Association Center for Best Practices

Common Core Standards Memorandum of Agreement

Purpose. This document commits states to a state-led process that will draw on evidence and lead to development and adoption of a common core of state standards (common core) in English language arts and mathematics for grades K-12. These standards will be aligned with college and work expectations, include rigorous content and skills, and be internationally benchmarked. The intent is that these standards will be aligned to state assessment and classroom practice. The second phase of this initiative will be the development of common assessments aligned to the core standards developed through this process.

Background. Our state education leaders are committed to ensuring all students graduate from high school ready for college, work, and success in the global economy and society. State standards provide a key foundation to drive this reform. Today, however, state standards differ significantly in terms of the incremental content and skills expected of students.

Over the last several years, many individual states have made great strides in developing high-quality standards and assessments. These efforts provide a strong foundation for further action. For example, a majority of states (35) have joined the American Diploma Project (ADP) and have worked individually to align their state standards with college and work expectations. Of the 15 states that have completed this work, studies show significant similarities in core standards across the states . States also have made progress through initiatives to upgrade standards and assessments, for example, the New England Common Assessment Program.

Benefits to States. The time is right for a state-led, nation-wide effort to establish a common core of standards that raises the bar for all students. This initiative presents a significant opportunity to accelerate and drive education reform toward the goal of ensuring that all children graduate from high school ready for college, work , and competing in the global economy and society. With the adoption of this common core, participating states will be able to:

- Articulate to parents, teachers, and the general public expectations for students;
- Align textbooks, digital media, and curricula to the internationally benchmarked standards;
- Ensure professional development to educators is based on identified need and best practices;
- • Develop and implement an assessment system to measure student performance against the common core ; and

- Evaluate policy changes needed to help students and educators meet the common core standards and "end-of-high-school" expectations.

An important tenet of this work will be to increase the rigor and relevance of state standards across all participating states; therefore, no state will see a decrease in the level of student expectations that exist in their current state standards.

Process and Structure

- **Common Core State-Based Leadership.** The Council of Chief State School Officers (CCSSO) and the National Governors Association Center for Best Practices (NGA Center) shall assume responsibility for coordinating the process that will lead to state adoption of a common core of standards (see attached timeline). These organizations represent governors and state commissioners of education who are charged with defining K-12 expectations at the state level.

  As such , these organizations will facilitate a state-led process to develop common core standards in English language arts and mathematics that are:

  – Fewer, clearer, and higher, to best drive effective policy and practice;

  – Aligned with college and work expectations, so that all students are prepared for success upon graduating from high school ;

  – Inclusive of rigorous content and application of knowledge through high-order skills , so that all students are prepared for the 21st century;

  – Internationally benchmarked, so that all students are prepared for succeeding in our global economy and society; and

  – Research and evidence-based.

- **National Validation Committee.** CCSSO and the NGA Center will create an expert validation group that will serve a several purposes, including validating end-of-course expectations, providing leadership for the development of K-12 standards, and certifying state adoption of the common core standards. The group will be comprised of national and international experts on standards. Participating states will have the opportunity to nominate individuals to the group. The national validation committee shall provide an independent review of the common core standards. The national validation committee will review the common core as it is developed and offer comments, suggestions, and validation of the process and products developed by the standards development group. The group will use evidence as the driving factor in validating the common core standards.

- **Develop End-of-High-School Expectations.** CCSSO and the NGA Center will convene Achieve, ACT and the College Board in an open, inclusive, and efficient process to develop a set of end-of-high-school expectations in English language arts and mathematics based on evidence. We will ask all participating states to review and provide input on these expectations. This work will be completed by July 2009.

- **Develop K-12 Standards in English Language Arts and Math.** CCSSO and the NGA Center will convene Achieve, ACT, and the College Board in an open, inclusive, and efficient process to develop K-12 standards that are grounded in empirical research and draw on best practices in standards development. We will ask participating states to provide input into the drafting of the common core and work as partners in the common core standards development process. This work will be completed by December 2009.

- **Adoption.** The goal of this effort is to develop a true common core of state standards that are internationally benchmarked. Each state adopting the common core standards either directly or by fully aligning its state standards may do so in accordance with current state timelines for standards adoption not to exceed three (3) years.

  This effort is voluntary for states, and it is fully intended that states adopting the common core standards may choose to include additional state standards beyond the common core standards. States that choose to align their standards to the common core standards agree to ensure that the common core represents at least 85 percent of the state 's standards in English language arts and mathematics.

  Further, the goal is to establish an ongoing development process that can support continuous improvement of this first version of the common core standards based on research and evidence based learning and can support the development of assessments that are aligned to the common core standards across the states, for accountability and other appropriate purposes.

- **National Policy Forum.** CCSSO and the NGA Center will convene a National Policy Forum (Forum) comprised of signatory national organizations (e.g., the Alliance for Excellent Education, Business Roundtable, National School Boards Association, Council of Great City Schools, Hunt Institute, National Association of State Boards of Education, National Education Association, and others) to share ideas , gather input, and inform the common core standards initiative. The forum is intended as a place for refining our shared understanding of the scope and elements of a common core; sharing and coordinating the various forms of implementation of a common core ; providing a means to develop common messaging between and among participating organizations; and building public will and support.

- Federal Role. The parties support a state-led effort and not a federal effort to develop a common core of state standards; there is, however, an appropriate federal role in supporting this state-led effort. In particular, the federal government can provide key financial support for this effort in developing a common core of state standards and in moving toward common assessments, such as through the Race to the Top Fund authorized in the American Recovery and Reinvestment Act of 2009. Further, the federal government can incentivize this effort through a range of tiered incentives, such as providing states with greater flexibility in the use of existing federal funds , supporting a revised state accountability structure, and offering financial support for states to effectively implement the standards. Additionally, the federal government can provide additional long-term financial support for the development of common assessments, teacher and principal professional development, other related common core standards supports, and a research agenda that can help continually improve the common core standards over time. Finally, the federal government can revise and align existing federal education laws with the lessons learned from states ' international benchmarking efforts and from federal research.

Agreement. The undersigned state leaders agree to the process and structure as described above and attest accordingly by our signature(s) below.

Signatures	
Governor:	
Chief State School Officer:	

B1-2: COMMON CORE STATE STANDARDS INITIATIVE PRESS RELEASE

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

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.

National Governors Association, 444 N. Capitol St., Suite 267, Washington, D.C. 20001-1512 | (202) 624-5300

B1-3: DOCUMENTATION OF INTERNATIONALLY BENCHMARKED STANDARDS

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.

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[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.

Dear State Partners:

Thank you so much for taking a look at this *unproofed, unformatted* final version of the Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects.

This final version is built on your excellent and thorough feedback. We want to begin by thanking you again for your work and that of your teams and the educators in your state. As you may know, we were also in receipt of ten thousand comments from the public Web site, so this draft reflects those comments as well. Finally, of course, several teacher organizations and other leading educational organizations and experts have continued to give us detailed feedback, so our work reflects this as well.

So thank you, thank you, thank you for your constructive feedback, conversation, and joint problem solving throughout the process. We never would have gotten to this final version without so much help and input from you. We hope you can now consider it your own work as well as ours.

In this note, we wanted to outline briefly themes from the feedback, how we incorporated the feedback, and what will be in the appendices and glossary that are not being sent now but will be in the published version.

Themes from the feedback and how we revised the Standards:

1. *Attending more fully to technical reading and writing*: Several states felt we had not adequately addressed technical reading and writing, and the Standards are substantially enhanced in this regard. You will notice the change in the title to make technical texts explicit. Also, we have threaded the demands of technical reading and writing throughout the grade-specific standards. Additional samples of technical reading will be added to Appendix B, and samples of student technical writing will be included in Appendix C.

2. *Ensuring text complexity is treated as a goal that does not overly constrain student reading throughout the year*: States were concerned that the way we had framed the text complexity requirements of the Standards seemed to limit attention to individual student needs during the year. We have substantially revised standard 10 on reading complex texts to ensure it is clear that it is an end-of-year expectation.

3. *Clarifying the grade-by-grade progressions, rendering them smoother and clearer to support high-quality instruction and assessment*. All of the progressions have been reviewed repeatedly and with care; we think you will find them far clearer as grade-specific standards year to year.

4. *Making sure the K–2 material is developmentally appropriate*: We have revised the K–2 standards to ensure that they are developmentally appropriate and that key skills such as fluency are extended to grade 5. In a similar vein, we have made standards pertaining to such areas as media and research applicable at the earliest grades in response to overwhelming feedback to do so.

5. *Expanding the richness of multimedia literacy and global diversity:* We have enhanced the Standards to address a fuller range of media and electronic text. We have also added clearer language on the need to study world literature and works from diverse cultures.

There are many other changes, based, as always, on our understanding of the feedback as well as the evidence for college and career readiness. We have made several clarifications that have been requested. We consider all of the changes we have made refinements, not radical revisions.

The appendices and glossary that will be published with the final Standards:

As requested, we will be adding a glossary of key terms. We are also refining Appendices A, B, and C in accord with your feedback.

Now that this is the final version, we are asking whether there are inadvertent errors that remain. Please let us know of any such errors by May 18th. We will not have the capacity to add significant new material or to make significant changes. However, we ask that states keep in mind their flexibility to add 15 percent to the Standards if they believe there is essential material that needs greater attention.

We have made every effort to listen closely and act with care and judgment. Thanks again for all your help and collaboration.

Best regards,

The ELA/Literacy Writing Team (Sue, David, and Jim)

COMMON CORE STATE STANDARDS FOR

English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects

Table of Contents

Introduction

The Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects ("the Standards") are the culmination of an extended, broad-based effort to fulfill the charge issued by the states to create the next generation of K–12 standards in order to help ensure that all students are college and career ready in literacy no later than the end of high school.

The present work, led by the Council of Chief State School Officers (CCSSO) and the National Governors Association (NGA), builds on the foundation laid by states in their decades-long work on crafting high-quality education standards. The Standards also draw on the most important international models as well as research and input from numerous sources, including state departments of education, scholars, assessment developers, professional organizations, educators from kindergarten through college, and parents, students, and other members of the public. In their design and content, refined through successive drafts and numerous rounds of feedback, the Standards represent a synthesis of the best elements of standards-related work to date and an important advance over that previous work.

As specified by CCSSO and NGA, the Standards are (1) research and evidence based, (2) aligned with college and work expectations, (3) rigorous, and (4) internationally benchmarked. A particular standard was included in the document only when the best available evidence indicated that its mastery was essential for college and career readiness in a twenty-first-century, globally competitive society. The Standards are intended to be a living work: as new and better evidence emerges, the Standards will be revised accordingly.

The Standards are an extension of a prior initiative led by CCSSO and NGA to develop College and Career Readiness (CCR) standards in reading, writing, speaking, listening, and language as well as in mathematics. The CCR Reading, Writing, and Speaking and Listening Standards, released in draft form in September 2009, serve, in revised form, as the backbone for the present document. Grade-specific K–12 standards in reading, writing, speaking, listening, and language translate the broad (and, for the earliest grades, seemingly distant) aims of the CCR standards into age- and attainment-appropriate terms.

The Standards set requirements for English language arts (ELA) but also for literacy in history/social studies, science, and technical subjects. Just as students must learn to read, write, speak, listen, and use language effectively in a variety of content areas, so too must the Standards specify the literacy skills and understandings required for college and career readiness in multiple disciplines. Literacy standards for grade 6 and above are predicated on teachers of ELA, history/social studies, science, and technical subjects using their content area expertise to help students meet the particular challenges of reading, writing, speaking, listening, and language in their respective fields. It is important to note that the 6–12 literacy standards in history/social studies, science, and technical subjects are not meant to replace content standards in those areas but rather to supplement them. States may incorporate the standards into their standards for these subjects or adopt them as content area literacy standards.

As a natural outgrowth of meeting the charge to define college and career readiness, the Standards also lay out a vision of what it means to be a literate person in the twenty-first century. Indeed, the skills and understandings students are expected to demonstrate have wide applicability outside the classroom or workplace. Students who meet the Standards readily undertake the close, attentive reading that is at the heart of understanding and enjoying complex works of literature. They habitually perform the critical reading necessary to pick carefully through the staggering amount of information available today in print and digitally. They actively seek the wide, deep, and thoughtful engagement with high-quality literary and informational texts that builds knowledge, enlarges experience, and broadens worldviews. They reflexively demonstrate the cogent reasoning and use of evidence that is essential to both private deliberation and responsible citizenship in a democratic republic. In short, students who meet the Standards develop the skills in reading, writing, speaking, and listening that are the foundation for any creative and purposeful expression in language.

May 2010

Key Design Considerations

CCR and grade-specific standards

The CCR standards anchor the document and define general, cross-disciplinary literacy expectations that must be met for students to be prepared to enter college and workforce training programs ready to succeed. The K–12 grade-specific standards define end-of-year expectations and a cumulative progression designed to enable students to meet college- and career-readiness expectations no later than the end of high school. The CCR and high school grade-specific standards work in tandem to define the college- and career-readiness line—the former providing broad standards, the latter providing additional specificity. Hence, both should be considered when developing college- and career-readiness assessments.

Students advancing through the grades are expected to meet each year's grade-specific standards, retain or further develop skills and understandings mastered in preceding grades, and work steadily toward meeting the more general expectations described by the CCR standards.

Grade levels for K–8; grade bands for 9–10 and 11–12

The Standards use individual grade levels in kindergarten through grade 8 to provide useful specificity; the Standards use two-year bands in grades 9–12 to allow schools, districts, and states flexibility in high school course design.

A focus on results rather than means

By emphasizing required achievements, the Standards leave room for teachers, curriculum developers, and states to determine how those goals should be reached and what additional topics should be addressed. Thus, the Standards do not mandate such things as a particular writing process or the full range of metacognitive strategies that students may need to monitor and direct their thinking and learning. Teachers are thus free to provide students with whatever tools and knowledge their professional judgment and experience identify as most helpful for meeting the goals set out in the Standards.

An integrated model of literacy

Although the Standards are divided into Reading, Writing, Speaking and Listening, and Language strands for conceptual clarity, the processes of communication are closely connected, as reflected throughout this document. For example, Writing standard 9 requires that students be able to write about what they read. Likewise, Speaking and Listening standard 4 sets the expectation that students will share findings from their research.

Research and media skills blended into the Standards as a whole

To be ready for college, workforce training, and life in a technological society, students need the ability to gather, comprehend, evaluate, synthesize, and report on information and ideas, to conduct original research in order to answer questions or solve problems, and to analyze and create a high volume and extensive range of print and nonprint texts in media forms old and new. The need to conduct research and to produce and consume media is embedded into every aspect of today's curriculum. In like fashion, research and media skills and understandings are embedded throughout the Standards rather than treated in a separate section.

Shared responsibility for students' literacy development

The Standards insist that instruction in reading, writing, speaking, listening, and language be a shared responsibility within the school. The K–5 standards include expectations for reading, writing, speaking, listening, and language applicable to a range of subjects, including but not limited to ELA. The grades 6–12 standards are divided into two sections, one for ELA and the other for history/social studies, science, and technical subjects. This division reflects the unique, time-honored place of ELA teachers in developing students' literacy skills while at the same time recognizing that teachers in other areas must have a role in this development as well.

Part of the motivation behind the interdisciplinary approach to literacy promulgated by the Standards is extensive research establishing the need for college- and career-ready students to be proficient in reading complex informational text independently in a variety of content areas. Most of the required reading in college and workforce training programs is informational in structure and challenging in content; postsecondary education programs typically provide students with both a higher volume of such reading than is generally required in K–12 schools and comparatively little scaffolding.

The Standards are not alone in calling for a special emphasis on informational text. The 2009 reading framework of the National Assessment of Educational Progress (NAEP) requires a high and increasing proportion of informational text on its assessment as students advance through the grades.

Distribution of Literary and Informational Passages by Grade in the 2009 NAEP Reading Framework

Grade	Literary	Informational
4	50%	50%
8	45%	55%
12	30%	70%

The Standards aim to align instruction with this framework so that many more students than at present can meet the requirements of college and career readiness. In K–5, the Standards follow NAEP's lead in balancing the reading of literature with the reading of informational texts, including texts in history/social studies, science, and technical subjects. In accord with NAEP's growing emphasis on informational texts in the higher grades, the Standards demand that a significant amount of reading of informational texts take place in and outside of the ELA classroom. Fulfilling the standards for 6–12 ELA requires much greater attention to a specific category of informational text—literary nonfiction—than has been traditional. Because the ELA classroom must focus on literature (stories, drama, and poetry) as well as literary nonfiction, a great deal of informational reading in grades 6–12 must take place in other classes if the NAEP assessment framework is to be matched instructionally.[1] To measure students' growth toward college and career readiness, assessments aligned with the Standards should adhere to the distribution of texts across grades cited in the NAEP framework.

NAEP likewise outlines a distribution across the grades of the core purposes and types of student writing. Similar to the Standards, the 2011 NAEP framework cultivates the development of three mutually reinforcing writing capacities: writing to persuade, to explain, and to convey real or imagined experience. Evidence concerning the demands of college and career readiness gathered during development of the Standards concurs with NAEP's shifting emphases: standards for grades 9–12 describe writing in all three forms, but, consistent with NAEP, the overwhelming focus of writing throughout high school should be on writing to argue and to inform or explain.[2]

Distribution of Communicative Purposes by Grade in the 2011 NAEP Writing Framework

Grade	To Persuade	To Explain	To Convey Experience
4	30%	35%	35%
8	35%	35%	30%
12	40%	40%	20%

It follows that writing assessments aligned with the Standards should adhere to the distribution of writing purposes across grades outlined by NAEP.

What is not *covered by the Standards*

The Standards should be recognized for what they are *not* as well as what they are. The most important intentional design limitations are as follows:

1) The Standards define what all students are expected to know and be able to do, not how teachers should teach. The Standards must be complemented by a well-developed, content-rich curriculum consistent with the expectations laid out in this document.

2) While the Standards do attempt to focus on what is most essential, they do not describe all that can or should be taught. A great deal is left to the discretion of teachers and curriculum developers. The aim of the Standards is to articulate the fundamentals, not to set out an exhaustive list nor a set of restrictions that limits what can be taught beyond what is specified herein.

3) The Standards do not define the nature of advanced work for students who meet the Standards prior to the end of high school. For those students, advanced work in such areas as literature, composition, language, and journalism should be available. This

[1] The percentages on the table reflect the sum of student reading, not just reading in ELA settings. Teachers of senior English classes, for example, are not required to devote 70 percent of reading to informational texts. Rather, 70 percent of student reading across the grade should be informational.

[2] As with reading, the percentages in the table reflect the sum of student writing, not just writing in ELA settings.

work should provide the next logical step up from the college and career readiness baseline established here.

4) The Standards set grade-specific standards but do not define the intervention methods or materials necessary to support students who are well below or well above grade-level expectations. It is also beyond the scope of the Standards to define the full range of supports appropriate for English language learners and for students with special needs. At the same time, all students must have the opportunity to learn and meet the same high standards if they are to access the knowledge and skills necessary in their post-school lives. The Standards should be read as allowing for the widest possible range of students to participate fully from the outset, along with appropriate accommodations to ensure maximum participaton of students with special education needs. For example, for students with disabilities *reading* should allow for use of Braille, screen reader technology, or other assistive devices, while *writing* should include the use of a scribe, computer, or speech-to-text technology. In a similar vein, speaking and *listening* should be interpreted broadly to include sign language. No set of grade-specific standards can fully reflect the great variety in abilities, needs, learning rates, and achievement levels of students in any given classroom. However, the Standards do provide clear signposts along the way to the goal of college and career readiness for all students.

5) While the ELA and content area literacy components described herein are critical to college and career readiness, they do not define the whole of such readiness. Students require a wide-ranging, rigorous academic preparation and, particularly in the early grades, attention to such matters as social, emotional, and physical development and approaches to learning. Similarly, the Standards define literacy expectations in history/social studies, science, and technical subjects, but literacy standards in other areas, such as mathematics and health education, modeled on those herein are strongly encouraged to allow for a comprehensive, schoolwide literacy program.

The Student Who is College and Career Ready in Reading, Writing, Speaking, Listening, and Language

The descriptions that follow are not standards themselves but instead offer a portrait of students who meet the standards set out in this document. As students advance through the grades and master the standards in reading, writing, speaking, listening, and language, they are able to exhibit with increasing fullness and regularity these capacities of the literate individual.

- **They demonstrate independence.**

Students can, without significant scaffolding or support, comprehend and evaluate complex texts 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 and request clarification if something is not understood. They ask relevant questions, build on others' ideas, articulate their own ideas, and ask for confirmation that they have been understood. Without prompting, they observe language conventions, determine word meanings, attend to the connotations of words, and acquire new vocabulary.

- **They build strong content knowledge.**

Students establish a base of knowledge across a wide range of subject matter by engaging with works of quality and substance. They become proficient in new areas through research and study. They read purposefully and listen attentively to gain both general knowledge and discipline-specific expertise. They refine and share their knowledge through writing and speaking.

- **They respond to the varying demands of audience, task, purpose, and discipline.**

Students consider their communication in relation to audience, task, purpose, and discipline. They appreciate nuances, such as how the composition of an audience should affect tone when speaking and how the connotations of words affect meaning. They also know that different disciplines call for different types of evidence (e.g., documentary evidence in history, experimental evidence in the sciences).

- **They comprehend as well as critique.**

Students are engaged and open-minded—but discerning—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.

- **They value evidence.**

Students cite specific evidence when offering an oral or written interpretation of a text. 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.

- **They use technology and digital media strategically and capably.**

Students employ technology thoughtfully to enhance their reading, writing, speaking, listening, and language use. 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.

- **They come to understand other perspectives and cultures.**

Students appreciate that the twenty-first-century classroom and workplace are settings in which people from often widely divergent cultures and who represent diverse experiences and perspectives must learn and work together. Students actively seek to understand other perspectives and cultures through reading and listening, and they are able to communicate effectively with people of varied backgrounds. They evaluate other points of view critically and constructively. Through reading great classic and contemporary works of literature representative of a variety of periods, cultures, and worldviews, students can vicariously inhabit worlds and have experiences much different than their own.

How to Read This Document

Overall Document Organization and Main Features

The Standards comprise three main sections: a comprehensive K–5 section and two content area–specific sections for grades 6–12, one for ELA and one for history/social studies, science, and technical subjects. Three appendices (lettered A, B, and C) accompany the main document.

Each section is divided into *strands*. K–5 and 6–12 ELA have Reading, Writing, Speaking and Listening, and Language strands; the 6–12 history/social studies, science, and technical subjects section focuses on Reading and Writing. Each strand is headed by a strand-specific set of *College and Career Readiness Anchor Standards* that is identical across all grades and content areas.

Standards for each grade within K–8 and for grades 9–10 and 11–12 follow the CCR standards in each strand. Each *grade-specific standard* (as these standards are collectively referred to) corresponds to the same-numbered CCR standard. Put another way, each CCR standard has an accompanying grade-specific standard translating the broader CCR statement into grade-appropriate end-of-year expectations.

Individual CCR standards can be identified by their strand, CCR status, and number (R.CCR.6, for example). Individual grade-specific standards can be identified by their strand, grade, and number or number and letter so that RI.4.3, for example, stands for Reading, Informational Text, grade 4, standard 3. Likewise, W.5.1a stands for Writing, grade 5, standard 1a. Strand designations can be found in brackets alongside the full strand title.

Who is responsible for which portion of the Standards

A single K–5 section lists CCR and grade-specific standards for reading, writing, speaking, listening, and language across the curriculum, reflecting the fact that most or all of the instruction students in these grades receive comes from one teacher. Grades 6–12 are covered in two content area–specific sections, the first for the English language arts teacher and the second for teachers of history/social studies, science, and technical subjects. Each section uses the same CCR standards but also includes grade-specific standards tuned to the literacy requirements of the particular discipline(s).

Key Features of the Standards

Reading: Text complexity and the growth of comprehension

The Reading standards place equal emphasis on the sophistication of what students read and the skill with which they read. Standard 10 defines a grade-by-grade "staircase" of increasing text complexity that rises from beginning reading to the college- and career-readiness level. Whatever they are reading, students must also show a steadily growing ability to discern more from and make fuller use of text, including making an increasing number of connections among ideas and between texts, considering a wider range of textual evidence, and becoming more sensitive to inconsistencies, ambiguities, and poor reasoning in texts.

Writing: Text types, responding to reading, and research

The Standards acknowledge the fact that whereas some writing skills, such as the ability to plan, revise, edit, and publish, are applicable to many types of writing, other skills are more properly defined in terms of specific writing types: arguments, informative/explanatory texts, and narratives. Standard 9 stresses the importance of the writing-reading connection by requiring students to draw and write about evidence from literary and informational texts. Because of the centrality of writing to most forms of inquiry, research standards are prominently included in this strand, though skills important to research are infused throughout the document.

Speaking and Listening: Flexible communication and collaboration

Including but not limited to skills necessary for formal presentations, the Speaking and Listening standards require students to develop a range of broadly useful oral communication and interpersonal skills. Students must learn to work together, express and listen to ideas, integrate information from oral, visual, and multimodal sources, evaluate what they hear, use digital media and visual displays strategically to help achieve communicative purposes, and adapt speech to context and task.

Language: Conventions and vocabulary

The standards on conventions and effective language use include the essential "rules" of formal written and spoken English, but they also approach language as a matter of craft and informed choice among alternatives. The vocabulary standards focus on understanding words, their relationships, and their nuances and on acquiring new words and phrases, particularly general academic and domain-specific vocabulary.

Appendices A, B, and C

Appendix A contains supplementary material on reading, writing, speaking and listening, and language as well as a glossary of key terms. Appendix B consists of text exemplars illustrating the complexity, quality, and range of reading appropriate for various grade levels. Appendix C includes annotated samples demonstrating at least adequate performance in student writing at various grade levels.

Standards for English Language Arts &

Literacy in History/Social Studies, Science, and Technical Subjects

K–5

College and Career Readiness Anchor Standards for Reading

The K–5 standards on the following pages define what students should understand and be able to do by the end of each grade. They relate to their College and Career Readiness (CCR) counterparts by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

Key Ideas and Details

1. Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.
2. Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.
3. Analyze how and why individuals, events, and ideas develop and interact over the course of a text.

Craft and Structure

4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and explain how specific word choices shape meaning or tone.
5. Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole.
6. Assess how point of view or purpose shapes the content and style of a text.

Integration of Knowledge and Ideas

7. Integrate and evaluate content presented graphically, visually, orally, and multimodally as well as in words within and across print and digital sources.*
8. Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.
9. Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.

Range of Reading and Level of Text Complexity

10. Read and comprehend complex literary and informational texts independently and proficiently.

*Please see "Research to Build and Present Knowledge" in Writing and "Comprehension and Collaboration" in Speaking and Listening for additional standards relevant to gathering, assessing, and applying information from print and digital sources.

Note on range and content of student reading

To build a foundation for college and career readiness, students must read widely and deeply from among a broad range of high-quality, increasingly challenging literary and informational texts. Through extensive reading of stories, dramas, poems, and myths from diverse cultures and different time periods, students gain literary and cultural knowledge as well as familiarity with various text structures and elements. By reading texts in history/social studies, science, and other disciplines, students build a foundation of knowledge in these fields that will also give them the background to be better readers in all content areas. Students can only gain this foundation when the curriculum is intentionally and coherently structured to develop rich content knowledge within and across grades. Students also acquire the habits of reading independently and closely, which are essential to their future success.

Reading Standards for Literature K–5 [RL]

The following standards offer a focus for instruction each year and help ensure that students gain adequate exposure to a range of texts and tasks. Rigor is also infused through the requirement that students read increasingly complex texts through the grades. Students advancing through the grades are expected to meet each year's grade-specific standards and retain or further develop skills and understandings mastered in preceding grades.

Kindergartners:	Grade 1 students:	Grade 2 students:
Key Ideas and Details		
1. With prompting and support, ask and answer questions about key details in a text.	**1.** Ask and answer questions about key details in a text.	**1.** Ask and answer such questions as *who*, *what*, *where*, *when*, *why*, and *how* to demonstrate understanding of key details in a text.
2. With prompting and support, retell familiar stories, including key details.	**2.** Retell stories, including key details, and demonstrate understanding of their central message or lesson.	**2.** Recount stories, including fables and folktales from diverse cultures, and determine their central message, lesson, or moral.
3. With prompting and support, identify characters, settings, and major events in a story.	**3.** Describe characters, settings, and major events in a story, using key details.	**3.** Describe how characters in a story respond to major events and challenges.
Craft and Structure		
4. Ask and answer questions about unknown words in a text.	**4.** Identify words and phrases in stories or poems that suggest feelings or appeal to the senses.	**4.** Describe how words and phrases (e.g., regular beats, alliteration, rhymes, repeated lines) supply rhythm and meaning in a story, poem, or song.
5. Recognize common types of texts (e.g., storybooks, poems).	**5.** Explain major differences between books that tell stories and books that give information, drawing on a wide reading of a range of text types.	**5.** Describe the overall structure of a story, including describing how the beginning introduces the story and the ending concludes the action.
6. With prompting and support, name the author and illustrator of a story and define the role of each in telling the story.	**6.** Identify who is telling the story at various points in a text.	**6.** Acknowledge differences in the points of view of characters, including by speaking in a different voice for each character when reading dialogue aloud.
Integration of Knowledge and Ideas		
7. With prompting and support, describe the connection between pictures or other illustrations and the overall story in which they appear.	**7.** Refer to pictures, illustrations, and details in a story to describe characters, setting, or events.	**7.** Use information from illustrations, other visual elements (e.g., maps), and the words in a print or digital text to demonstrate understanding of the characters, setting, or plot.
8. (Not applicable to literature)	**8.** (Not applicable to literature)	**8.** (Not applicable to literature)
9. With prompting and support, compare and contrast the adventures and experiences of characters in familiar stories.	**9.** Compare and contrast the adventures and experiences of characters in stories.	**9.** Compare and contrast two or more versions of the same story (e.g., Cinderella stories) by different authors or from different cultures.
Range of Reading and Level of Text Complexity		
10. Actively engage in group reading activities with purpose and understanding.	**10.** With prompting and support, read appropriately complex prose and poetry for grade 1.	**10.** By the end of the year, read literature, including stories, poetry, and drama, in the grades 2–3 text complexity band proficiently, with scaffolding as needed at the high end of the range.

Grade 3 students:	Grade 4 students:	Grade 5 students:
Key Ideas and Details		
1. Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.	**1.** Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.	**1.** Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.
2. Recount stories, including fables, folktales, and myths from diverse cultures; determine the central message, lesson, or moral and explain how it is conveyed through key details in the text.	**2.** Determine a theme of a story, drama, or poem from details in the text; summarize the text.	**2.** Determine a theme of a story, drama, or poem from details in the text, including how characters in a story or drama respond to challenges or how the speaker in a poem reflects upon a topic; summarize the text.
3. Describe characters in a story (e.g., their traits, motivations, or feelings) and explain how their actions contribute to the sequence of events.	**3.** Describe in depth a character, setting, or event in a story or drama, drawing on specific details in the text (e.g., a character's thoughts, words, or actions).	**3.** Compare and contrast two or more characters, settings, or events in a story or drama, drawing on specific details in the text (e.g., how characters interact).
Craft and Structure		
4. Determine the meaning of words and phrases as they are used in a text, distinguishing literal from nonliteral language.	**4.** Determine the meaning of words and phrases as they are used in a text, including those that allude to significant characters found in mythology (e.g., *Herculean*), drawing on a wide reading of classic myths from a variety of cultures and periods.	4. Determine the meaning of words and phrases as they are used in a text, including figurative language such as metaphors and similes.
5. Refer to parts of stories, dramas, and poems when writing or speaking about a text, using terms such as *chapter*, *scene*, and *stanza*; describe how each successive part builds on earlier sections.	**5.** Explain major differences between poems, drama, and prose and refer to the core structural elements of poems (e.g., stanza, verse, rhythm, meter) and drama (e.g., casts of characters, setting descriptions, dialogue, acts, scenes, stage directions) when writing or speaking about a text.	**5.** Explain how a series of chapters, scenes, or stanzas fits together to provide the overall structure of a particular story, drama, or poem.
6. Distinguish their own point of view from that of the narrator or those of the characters.	**6.** Compare and contrast the point of view from which different stories are narrated, including the difference between first- and third-person narrations.	**6.** Describe how a narrator's or speaker's point of view influences how events are described.
Integration of Knowledge and Ideas		
7. Explain how specific images and illustrations contribute to or clarify a story (e.g., create mood, emphasize particular aspects of characters or settings).	**7.** Integrate information gained from illustrations and other visual elements in a text with the words to demonstrate understanding of how the characters, setting, and plot interact and develop.	7. Analyze how visual and multimedia elements in conjunction with words contribute to the meaning, tone, or beauty of a text (e.g., graphic novel, multimedia presentation of fiction).
8. (Not applicable to literature)	**8.** (Not applicable to literature)	**8.** (Not applicable to literature)
9. Compare and contrast the themes, settings, and plots of stories written by the same author about the same or similar characters (e.g., in books from a series).	**9.** Compare and contrast the treatment of similar themes and topics (e.g., opposition of good and evil) and patterns of events (e.g., the quest) in stories, myths, and traditional literature from different cultures.	**9.** Compare and contrast stories in the same genre (e.g., mysteries and adventure stories) on their approaches to similar themes and topics.

Grade 3 students:	Grade 4 students:	Grade 5 students:
Range of Reading and Level of Text Complexity		
10. By the end of the year, read and comprehend literature, including stories, dramas, and poetry, in the grades 2–3 text complexity band independently and proficiently.	**10.** By the end of the year, read and comprehend literature, including stories, dramas, and poetry, in the grades 4–5 text complexity band proficiently, with scaffolding as needed at the high end of the range.	**10.** By the end of the year, read and comprehend literature, including stories, dramas, and poetry, in the grades 4–5 text complexity band independently and proficiently.

Kindergartners:	Grade 1 students:	Grade 2 students:
Key Ideas and Details		
1. With prompting and support, ask and answer questions about key details in a text.	**1.** Ask and answer questions about key details in a text.	**1.** Ask and answer such questions as *who*, *what*, *where*, *when*, *why*, and *how* to demonstrate understanding of key details in a text.
2. With prompting and support, identify the main topic and retell key details of a text.	**2.** Identify the main topic and retell key details of a text.	**2.** Identify the main topic of a multiparagraph text as well as the focus of specific paragraphs within the text.
3. With prompting and support, describe the connection between two individuals, events, ideas, or pieces of information in a text.	**3.** Describe the connection between two individuals, events, ideas, or pieces of information in a text.	**3.** Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.
Craft and Structure		
4. With prompting and support, ask and answer questions about unknown words in a text.	**4.** Ask and answer questions to help determine or clarify the meaning of words and phrases in a text.	**4.** Determine the meaning of words and phrases in a text relevant to a *grade 2 topic or subject area*.
5. Identify the front cover, back cover, and title page of a book.	**5.** Know and use various text features (e.g., headings, tables of contents, glossaries, electronic menus, icons) to locate key facts or information in a text.	**5.** Know and use various text features (e.g., captions, bold print, subheadings, glossaries, indexes, electronic menus, icons) to locate key facts or information in a text quickly and efficiently.
6. Name the author and illustrator of a text and define the role of each in presenting the ideas or information in a text.	**6.** Distinguish between information provided by pictures or other illustrations and information provided by the words in a text.	**6.** Identify the main purpose of a text, including what the author wants to answer, explain, or describe.
Integration of Knowledge and Ideas		
7. With prompting and support, describe the connection between pictures or other illustrations and the overall text in which they appear.	**7.** Use pictures, illustrations, and details in a text to describe its key ideas.	**7.** Explain how specific images and other illustrations contribute to and clarify a text (e.g., show how something works).
8. With prompting and support, identify the reasons an author gives to support points in a text.	**8.** Identify the reasons an author gives to support points in a text.	**8.** Describe how reasons support specific points the author makes in a text.
9. With prompting and support, identify basic similarities in and differences between two texts on the same topic (e.g., in illustrations, descriptions, or procedures).	**9.** Identify basic similarities in and differences between two texts on the same topic (e.g., in illustrations, descriptions, or procedures).	**9.** Compare and contrast the most important points presented by two texts on the same topic.
Range of Reading and Level of Text Complexity		
10. Actively engage in group reading activities with purpose and understanding.	**10.** With prompting and support, read appropriately complex informational texts for grade 1.	**10.** By the end of year, read and comprehend informational texts, including historical, scientific and technical texts, in the grades 2–3 text complexity band proficiently, with scaffolding as needed at the high end of the range

Grade 3 students:	Grade 4 students:	Grade 5 students:
Key Ideas and Details		
1. Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.	**1.** Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.	**1.** Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.
2. Determine the main idea of a text; recount the key details and explain how they support the main idea.	**2.** Determine the main idea of a text and explain how it is supported by key details; summarize the text.	**2.** Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text.
3. Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.	**3.** Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.	**3.** Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.
Craft and Structure		
4. Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a *grade 3 topic or subject area*.	**4.** Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a *grade 4 topic or subject area*.	**4.** Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a *grade 5 topic or subject area*.
5. Use text features and search tools (e.g., key words, sidebars, hyperlinks) to locate information relevant to a given topic quickly and efficiently.	**5.** Describe the overall structure of events, ideas, concepts, or information (e.g., chronology, comparison, cause/effect) in a text or part of a text.	**6.** Compare and contrast the organizational structure of events, ideas, concepts, or information (e.g., chronology, comparison, cause/effect, problem/solution) in two or more texts.
6. Distinguish their own point of view from that of the author of a text.	**6.** Compare and contrast a firsthand and secondhand account of the same event or topic; describe the differences in focus and the information provided.	**7.** Analyze multiple accounts of the same event or topic, noting important similarities and differences in the point of view they represent.
Integration of Knowledge and Ideas		
7. Use information gained from illustrations, other visual elements (e.g., maps, photographs), and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).	**7.** Interpret factual information presented graphically or visually (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to understanding the text in which they appear.	**7.** Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.
8. Describe the logical connection between particular sentences and paragraphs in a text (e.g., comparison, cause/effect, first/second/third in a sequence).	**8.** Explain how an author uses reasons and evidence to support particular points in a text.	**8.** Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence supports which point(s).
9. Compare and contrast the most important points and key details presented in two texts on the same topic.	**9.** Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably.	**9.** Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably.

Grade 3 students:	Grade 4 students:	Grade 5 students:
Range of Reading and Level of Text Complexity		
10. By the end of the year, read and comprehend informational texts, including historical, scientific, and technical texts, in the grades 2–3 text complexity band independently and proficiently.	**10.** By the end of year, read and comprehend informational texts, including historical, scientific, and technical texts, in the grades 4–5 text complexity band proficiently, with scaffolding as necessary at the high end of the range.	**10.** By the end of the year, read and comprehend informational text, including historical, scientific, and technical texts, in the grades 4–5 text complexity band level independently and proficiently.

Reading Standards: Foundational Skills (K–5)

[RF]

These standards are directed toward fostering students' understanding and working knowledge of concepts of print, the alphabetic principle, and other basic conventions of the English writing system. These Foundational Skills are not an end in and of themselves; rather, they are necessary and important components of an effective, comprehensive reading program designed to develop proficient readers with the capacity to comprehend texts across a range of types and disciplines. Instruction should be differentiated: Good readers will need much less practice with these concepts than struggling readers. The point is to teach students what they need to learn and not what they already know—to discern when particular children or activities warrant more or less attention.

*** In Kindergarten children are expected to demonstrate increasing awareness and competence in the areas that follow.***

Kindergartners:	Grade 1 students:
Print Concepts	
1. Demonstrate understanding of the organization and basic features of print. a. Follow words from left to right, top to bottom, and page-by-page. b. Recognize that spoken words are represented in written language by specific sequences of letters. c. Understand that words are separated by spaces in print. d. Recognize and name all upper- and lowercase letters of the alphabet.	**1.** Demonstrate understanding of the organization and basic features of print. a. Recognize the distinguishing features of a sentence (e.g., first word, capitalization, ending punctuation).
Phonological Awareness	
2. Demonstrate understanding of spoken words, syllables, and sounds (phonemes). a. Recognize and produce rhyming words. b. Count, pronounce, blend, and segment syllables in spoken words. c. Blend and segment onsets and rimes of single-syllable spoken words. d. Isolate and pronounce the initial, medial vowel, and final sounds (phonemes) in three-phoneme (CVC) words.[1] (This does not include CVCs ending with /l/, /r/, or /x/.) e. Add or substitute individual sounds (phonemes) in simple, one-syllable words to make new words.	**2.** Demonstrate understanding of spoken words, syllables, and sounds (phonemes). a. Distinguish long from short vowel sounds in spoken single-syllable words . b. Orally produce single-syllable words by blending sounds (phonemes), including consonant blends. c. Isolate and pronounce initial, medial vowel, and final sounds (phonemes) in spoken single-syllable words. d. Segment spoken single-syllable words into their complete sequence of individual sounds (phonemes).

[1]Words, syllables, or phonemes written in /slashes/refer to their pronunciation or phonology. Thus, /CVC/ is a word with three phonemes regardless of the number of letters in the spelling of the word.

** In Kindergarten children are expected to demonstrate increasing awareness and competence in the areas that follow.*

Kindergartners:*	Grade 1 students:	Grade 2 students:
Phonics and Word Recognition		
3. Know and apply grade-level phonics and word analysis skills in decoding words. a. Demonstrate basic knowledge of letter-sound correspondences by producing the primary or most frequent sound for each consonant. b. Associate the long and short sounds with the common spellings (graphemes) for the five major vowels. c. Read common high-frequency words by sight. (e.g., *the, of, to, you, she, my, is, are, do, does*). d. Distinguish between similarly spelled words by identifying the sounds of the letters that differ.	**3.** Know and apply grade-level phonics and word analysis skills in decoding words. a. Know the spelling-sound correspondences for common consonant digraphs.(two letters that represent one sound). b. Decode regularly spelled one-syllable words. c. Know final *-e* and common vowel team conventions for representing long vowel sounds. d. Use knowledge that every syllable must have a vowel sound to determine the number of syllables in a printed word. e. Decode two-syllable words following basic patterns by breaking the words into syllables. f. Read words with inflectional endings. g. Recognize and read grade-appropriate irregularly spelled words.	**3.** Know and apply grade-level phonics and word analysis skills in decoding words. a. Distinguish long and short vowels when reading regularly spelled one-syllable words. b. Know spelling-sound correspondences for additional common vowel teams. c. Decode regularly spelled two-syllable words with long vowels. d. Decode words with common prefixes and suffixes. e. Identify words with inconsistent but common spelling-sound correspondences. f. Recognize and read grade-appropriate irregularly spelled words.
4. Read emergent-reader texts with purpose and understanding.	**4.** Read with sufficient accuracy and fluency to support comprehension. a. Read on-level text with purpose and understanding. b. Read on-level text orally with accuracy, appropriate rate, and expression. c. Use context to confirm or self-correct word recognition and understanding, rereading as necessary.	**4.** Read with sufficient accuracy and fluency to support comprehension. a. Read on-level text with purpose and understanding. b. Read on-level text orally with accuracy, appropriate rate, and expression. c. Use context to confirm or self-correct word recognition and understanding, rereading as necessary.

Grade 3 students:	Grade 4 students:	Grade 5 students:
Phonics and Word Recognition		
3. Know and apply grade-level phonics and word analysis skills in decoding words. a. Identify and know the meaning of the most common prefixes and derivational suffixes. b. Decode words with common Latin suffixes. c. Decode multisyllable words. d. Read grade-appropriate irregularly spelled words.	**3.** Know and apply grade-level phonics and word analysis skills in decoding words. a. Use combined knowledge of all letter-sound correspondences, syllabication patterns, and morphology (e.g., roots and affixes) to read accurately unfamiliar multi-syllabic words in context and out of context.	**3.** Know and apply grade-level phonics and word analysis skills in decoding words. a. Use combined knowledge of all letter-sound correspondences, syllabication patterns, and morphology (e.g., roots and affixes) to read accurately unfamiliar multi-syllabic words in context and out of context.
Fluency		
4. Read with sufficient accuracy and fluency to support comprehension. a. Read on-level text with purpose and understanding. b. Read on-level prose and poetry orally with accuracy, appropriate rate, and expression. c. Use context to confirm or self-correct word recognition and understanding, rereading as necessary.	**4.** Read with sufficient accuracy and fluency to support comprehension. a. Read on-level text with purpose and understanding. b. Read on-level prose and poetry orally with accuracy, appropriate rate, and expression. c. Use context to confirm or self-correct word recognition and understanding, rereading as necessary.	**4.** Read with sufficient accuracy and fluency to support comprehension. a. Read on-level text with purpose and understanding. b. Read on-level prose and poetry orally with accuracy, appropriate rate, and expression. c. Use context to confirm or self-correct word recognition and understanding, rereading as necessary.

College and Career Readiness Anchor Standards for Writing

The K–5 standards on the following pages define what students should understand and be able to do by the end of each grade. They relate to their College and Career Readiness (CCR) counterparts by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

Text Types and Purposes[1]

1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.
2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.
3. Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.

Production and Distribution of Writing

4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.[2]
6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

Research to Build and Present Knowledge

7. Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.
8. Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.
9. Draw evidence from literary or informational texts to support analysis, reflection, and research.

Range of Writing

10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

[1]These broad types of writing include many subgenres. See Appendix A for definitions of key writing types.
[2]See standards 1–3 in Language, pages 26–31, for specific editing expectations.

Note on range and content of student writing

To build a foundation for college and career readiness, students need to learn to use writing as a way of offering and supporting opinions, demonstrating understanding of the subjects they are studying, and conveying real and imagined experiences and events. They learn to appreciate that a key purpose of writing is to communicate clearly to an external, sometimes unfamiliar audience, and they begin to adapt the form and content of their writing to accomplish a particular task and purpose.. They develop the capacity to build knowledge on a subject through research projects and to respond analytically to literary and informational sources. To meet these goals, students must devote significant time and effort to writing, producing numerous pieces over short and extended time frames throughout the year.

Writing Standards K–5 [W]

The following standards for K–5 offer a focus for instruction each year to help ensure that students gain adequate mastery of a range of skills and applications. Each year in their writing, students should demonstrate increasing sophistication in all aspects of language use, from vocabulary and syntax to the development and organization of ideas, and they should address increasingly demanding content and sources. Students advancing through the grades are expected to meet each year's grade-specific standards and retain or further develop skills and understandings mastered in preceding grades. The expected growth in student writing ability is reflected both in the standards themselves and in the collection of annotated student writing samples in Appendix C.

Kindergartners:	Grade 1 students:	Grade 2 students:
Text Types and Purposes		
1. Use a combination of drawing, dictating, and writing to compose opinion pieces in which they tell a reader the topic or the name of the book they are writing about and state an opinion or preference about the topic or book (e.g., *My favorite book is . . .*).	**1.** Write opinion pieces in which they introduce the topic or name the book they are writing about, state an opinion, supply a reason for the opinion, and provide some sense of closure.	**1.** Write opinion pieces in which they introduce the topic or book they are writing about, state an opinion, supply reasons that support the opinion, use linking words (e.g., *because*, *and*, *also*) to connect opinion and reasons, and provide a concluding statement or section.
2. Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.	**2.** Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure.	**2.** Write informative/explanatory texts in which they introduce a topic, use facts and definitions to develop points, and provide a concluding statement or section.
3. Use a combination of drawing, dictating, and writing to narrate a single event or several loosely linked events, tell about the events in the order in which they occurred, and provide a reaction to what happened.	**3.** Write narratives in which they recount two or more appropriately sequenced events, include some details regarding what happened, use temporal words to signal event order, and provide some sense of closure.	**3.** Write narratives in which they recount a well-elaborated event or short sequence of events, include details to describe actions, thoughts, and feelings, use temporal words to signal event order, and provide a sense of closure.
Production and Distribution of Writing		
4. (Begins in grade 3)	**4.** (Begins in grade 3)	**4.** (Begins in grade 3)
5. With guidance and support from adults, respond to questions and suggestions from peers and add details to strengthen writing as needed.	**5.** With guidance and support from adults, focus on a topic, respond to questions and suggestions from peers, and add details to strengthen writing as needed.	**5.** With guidance and support from adults and peers, focus on a topic and strengthen writing as needed by revising and editing.
6. With guidance and support from adults, explore a variety of digital tools to produce and publish writing, including in collaboration with peers.	**6.** With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers.	**6.** With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers.
Research to Build and Present Knowledge		
7. Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them).	**7.** Participate in shared research and writing projects (e.g., explore a number of "how-to" books on a given topic and use them to write a sequence of instructions).	**7.** Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations).
8. With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.	**8.** With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.	**8.** Recall information from experiences or gather information from provided sources to answer a question.
9. (Begins in grade 4)	**9.** (Begins in grade 4)	**9.** (Begins in grade 4)
Range of Writing		
10. (Begins in grade 3)	**10.** (Begins in grade 3)	**10.** (Begins in grade 3)

Grade 3 students:	Grade 4 students:	Grade 5 students:
Text Types and Purposes		
1. Write opinion pieces on familiar topics or texts, supporting a point of view with reasons. a. Introduce the topic or book they are writing about, state an opinion, and create an organizational structure that lists reasons. b. Provide reasons that support the opinion. c. Use linking words and phrases (e.g., *because*, *therefore*, *since*, *for example*) to connect opinion and reasons. d. Provide a concluding statement or section.	**1.** Write opinion pieces on topics or texts, supporting a point of view with reasons and information. a. Introduce a topic or text clearly, state an opinion, and create an organizational structure in which related ideas are grouped to support the writer's purpose. b. Provide reasons that are supported by facts and details. c. Link opinion and reasons using words and phrases (e.g., *for instance*, *in order to, in addition*). d. Provide a concluding statement or section related to the opinion presented.	**1.** Write opinion pieces on topics or texts, supporting a point of view with reasons and information. a. Introduce a topic or text clearly, state an opinion, and create an organizational structure in which ideas are logically grouped to support the writer's purpose. b. Provide logically ordered reasons that are supported by facts and details. c. Link opinion and reasons using words, phrases, and clauses (e.g., *consequently*, *specifically*). d. Provide a concluding statement or section related to the opinion presented.
2. Write informative/explanatory texts to examine a topic and convey ideas and information clearly. a. Introduce a topic and group related information together; include illustrations when useful to aiding comprehension. b. Develop the topic with facts, definitions, and details. c. Use linking words and phrases (e.g., *also*, *another*, *and*, *more*, *but*) to connect ideas within categories of information. d. Provide a concluding statement or section.	**2.** Write informative/explanatory texts to examine a topic and convey ideas and information clearly. a. Introduce a topic clearly and group related information in paragraphs and sections; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension. b. Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic. c. Link ideas within categories of information using words and phrases (e.g., *another*, *for example*, *also*, *because*). d. Use precise language and domain-specific vocabulary to inform about or explain the topic. e. Provide a concluding statement or section related to the information or explanation presented.	**2.** Write informative/explanatory texts to examine a topic and convey ideas and information clearly. a. Introduce a topic clearly, provide a general observation and focus, and group related information logically; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension. b. Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic. c. Link ideas within and across categories of information using words, phrases, and clauses (e.g., *in contrast*, *especially*). d. Use precise language and domain-specific vocabulary to inform about or explain the topic. e. Provide a concluding statement or section related to the information or explanation presented.
3. Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences. a. Establish a situation and introduce a narrator and/or characters; organize an event sequence that unfolds naturally. b. Use dialogue and descriptions of actions, thoughts, and feelings to develop experiences and events or show the response of characters to situations. c. Use temporal words and phrases to signal event order. d. Provide a sense of closure.	**3.** Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences. a. Orient the reader by establishing a situation and introducing a narrator and/or characters; organize an event sequence that unfolds naturally. b. Use dialogue and description to develop experiences and events or show the responses of characters to situations. c. Use a variety of transitional words and phrases to manage the sequence of events. d. Use concrete words and phrases and sensory details to convey experiences and events precisely. e. Provide a conclusion that follows from the narrated experiences or events.	**3.** Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences. a. Orient the reader by establishing a situation and introducing a narrator and/or characters; organize an event sequence that unfolds naturally. b. Use narrative techniques, such as dialogue, description, and pacing, to develop experiences and events or show the responses of characters to situations. c. Use a variety of transitional words, phrases, and clauses to manage the sequence of events. d. Use concrete words and phrases and sensory details to convey experiences and events precisely. e. Provide a conclusion that follows from the narrated experiences or events.

Grade 3 students:	Grade 4 students:	Grade 5 students:
Production and Distribution of Writing		
4. With guidance and support from adults, produce writing in which the development and organization are appropriate to task and purpose. (Grade-specific expectations for writing types are defined in standards 1–3 above.)	**4.** Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)	**4.** Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)
5. With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing.	**5.** With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing.	**5.** With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.
6. With guidance and support from adults, use technology to produce and publish writing (using keyboarding skills) as well as to interact and collaborate with others.	**6.** With some guidance and support from adults, use technology, including the Internet, to produce and publish writing (using the keyboard) as well as to interact and collaborate with others.	**6.** With some guidance and support from adults, use technology, including the Internet, to produce and publish a minimum of two pages of writing (using the keyboard) as well as to interact and collaborate with others.
Research to Build Knowledge		
7. Conduct short research projects that build knowledge about a topic.	**7.** Conduct short research projects that build knowledge through investigation of different aspects of a topic.	**7.** Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic.
8. Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.	**8.** Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources.	**8.** Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources.
9. (Begins in grade 4)	**9.** Draw evidence from literary or informational texts to support analysis, reflection, and research. a. Apply *grade 4 Reading standards* to literature (e.g., "Describe in depth a character, setting, or event in a story or drama, drawing on specific details in the text"). b. Apply *grade 4 Reading standards* to informational texts (e.g., "Explain how an author uses reasons and evidence to support particular points in a text").	**9.** Draw evidence from literary or informational texts to support analysis, reflection, and research. a. Apply *grade 5 Reading standards* to literature (e.g., "Compare and contrast two or more characters, settings, or events in a story or a drama, drawing on specific details in the text"). b. Apply *grade 5 Reading standards* to informational texts (e.g., "Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence supports which point[s]").
Range of Writing		
10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	**10.** Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	**10.** Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

College and Career Readiness Anchor Standards for Speaking and Listening

The K–5 standards on the following pages define what students should understand and be able to do by the end of each grade. They relate to their College and Career Readiness (CCR) counterparts by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

Comprehension and Collaboration

1. Prepare for and participate effectively in a range of conversations and collaborations, building on others' ideas and expressing their own clearly and persuasively.
2. Integrate and evaluate content from multiple graphical, visual, oral, or multimodal sources.
3. Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric.

Presentation of Knowledge and Ideas

4. Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.
5. Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.
6. Adapt speech to a variety of contexts and communicative tasks, demonstrating command of formal English when indicated or appropriate.

Note on range and content of student speaking and listening

To build a foundation for college and career readiness, students must have ample opportunities to take part in a variety of rich, structured conversations—as part of a whole class, in small groups, and with a partner. Being productive members of these conversations requires that students contribute accurate, relevant information; respond to and develop what others have said; make comparisons and contrasts; and analyze and synthesize a multitude of ideas in various domains.

New technologies have broadened and expanded the role that speaking and listening play in acquiring and sharing knowledge and have tightened their link to other forms of communication. Digital texts confront students with the potential for continually updated content and dynamically changing combinations of words, graphics, images, hyperlinks, and embedded video and audio.

Speaking and Listening Standards K–5

[SL]

The following standards for K–5 offer a focus for instruction each year to help ensure that students gain adequate mastery of a range of skills and applications. Students advancing through the grades are expected to meet each year's grade-specific standards and retain or further develop skills and understandings mastered in preceding grades.

Kindergartners:	**Grade 1 students:**	**Grade 2 students:**
Comprehension and Collaboration		
1. Participate in collaborative conversations about *kindergarten topics and texts* with peers and adults in small and larger groups. a. Follow agreed-upon rules for discussions (e.g., listening to others and taking turns speaking about the topics and texts under discussion). b. Continue a conversation through multiple exchanges.	**1.** Participate in collaborative conversations about *grade 1 topics and texts* with peers and adults in small and larger groups. a. Follow agreed-upon rules for discussions (e.g., listening to others with care, speaking one at a time about the topics and texts under discussion). b. Build on others' talk in conversations by responding to the comments of others through multiple exchanges. c. Ask questions to clear up any confusion about the topics and texts under discussion.	**1.** Participate in collaborative conversations about *grade 2 topics and texts* with peers and adults in small and larger groups. a. Follow agreed-upon rules for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion). b. Build on others' talk in conversations by linking their comments to the remarks of others. c. Ask for clarification and further explanation as needed about the topics and texts under discussion.
2. Confirm understanding of written texts read aloud or information presented orally or through media by asking and answering questions about key details.	**2.** Demonstrate understanding of written texts read aloud or information presented orally or through media by asking and answering questions about key details and restating key elements.	**2.** Recount or describe key ideas or details from written texts read aloud or information presented orally or through media.
3. Ask and answer questions in order to seek help, get information, or clarify something that is not understood.	**3.** Ask and answer questions about what a speaker says in order to gather additional information or clarify something that is not understood.	**3.** Ask and answer questions about what a speaker says in order to clarify comprehension, gather additional information, or deepen understanding of a topic or issue.
Presentation of Knowledge and Ideas		
4. Describe familiar people, places, things, and events and, with prompting and support, provide additional detail.	**4.** Describe people, places, things, and events with relevant details, expressing ideas and feelings clearly.	**4.** Tell a story or recount an experience with appropriate facts and relevant, descriptive details, speaking audibly in coherent sentences.
5. Add drawings or other visual displays to descriptions as desired to provide additional detail.	**5.** Add drawings or other visual displays to descriptions when appropriate to clarify ideas, thoughts, and feelings.	**5.** Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings.
6. Speak audibly and express thoughts, feelings, and ideas clearly.	**6.** Produce complete sentences when appropriate to task and situation. (See standards 1–3 in Language, pages 26–31, for specific expectations.)	**6.** Produce complete sentences when appropriate to task and situation in order to provide requested detail or clarification. (See standards 1–3 in Language, pages 26–31, for specific expectations.)

Grade 3 students:	Grade 4 students:	Grade 5 students:
Comprehension and Collaboration		
1. Engage effectively in a range of collaborative discussions (one-on-one and in groups) on *grade 3 topics and texts*, building on others' ideas and expressing their own clearly. a. Follow agreed-upon rules for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion). b. Ask questions to check understanding of information presented, stay on topic, and link their comments to the remarks of others. c. Explain their own ideas and understanding in light of the discussion.	**1.** Engage effectively in range of collaborative discussions (one-on-one and in groups) on *grade 4 topics and texts*, building on others' ideas and expressing their own clearly. a. Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussions. b. Follow agreed-upon rules for discussions and carry out assigned roles. c. Pose and respond to specific questions to clarify or follow up on information, and make comments that contribute to the discussion and link to the remarks of others. d. Review the key ideas expressed and explain their own ideas and understanding in light of the discussion.	**1.** Engage effectively in a range of collaborative discussions (one-on-one and in groups) on *grade 5 topics and texts*, building on others' ideas and expressing their own clearly. a. Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion. b. Follow agreed-upon rules for discussions and carry out assigned roles. c. Pose and respond to specific questions by making comments that contribute to the discussion and elaborate on the remarks of others. d. Review the key ideas expressed and draw conclusions in light of information and knowledge gained from the discussions.
2. Identify the main ideas and supporting details of written texts read aloud or information presented graphically, orally, visually, or multimodally.	**2.** Paraphrase portions of written texts read aloud or information presented graphically, orally, visually, or multimodally.	**2.** Summarize written texts read aloud or information presented graphically, orally, visually, or multimodally.
3. Ask and answer questions about information from a speaker's, offering appropriate elaboration and detail.	**3.** Identify the reasons and evidence a speaker provides to support particular points.	**3.** Summarize the points a speaker makes and explain how each claim is supported by reasons and evidence.
Presentation of Knowledge and Ideas		
4. Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.	**4.** Report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.	**4.** Report on a topic or text or present an opinion, sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.
5. Create engaging audio recordings of stories or poems that demonstrate fluid reading at an understandable pace; add visual displays when appropriate to emphasize or enhance certain facts or details.	**5.** Add audio recordings and visual displays to presentations when appropriate to enhance the development of main ideas or themes.	**5.** Include multimedia components (e.g., graphics, sound) and visual displays in presentations when appropriate to enhance the development of main ideas or themes.
6. Speak in complete sentences when appropriate to task and situation in order to provide requested detail or clarification. (See standards 1–3 in Language, pages 26–31, for specific expectations.)	**6.** Differentiate between contexts that call for formal English (e.g., presenting ideas) and situations where informal discourse is appropriate (e.g., small-group discussion); use formal English when appropriate to task and situation. (See standards 1–3 in Language, pages 26–31, for specific expectations.)	**6.** Adapt speech to a variety of contexts and tasks, using formal English when appropriate to task and situation. (See standards 1–3 in Language, pages 26–31, for specific expectations.)

College and Career Readiness Anchor Standards for Language

The K–5 standards on the following pages define what students should understand and be able to do by the end of each grade. They relate to their College and Career Readiness (CCR) counterparts by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

Conventions

1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
2. Demonstrate command of the conventions of capitalization, punctuation, and spelling when writing.

Effective Language Use

3. Use language to enhance meaning, convey style, and achieve particular effects when writing or speaking.

Vocabulary Acquisition and Use

4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases by using context clues, analyzing meaningful word parts, and consulting general and specialized reference materials, as appropriate.
5. Demonstrate understanding of word relationships and nuances in word meanings.
6. Acquire and use accurately a range of general academic and domain-specific vocabulary sufficient for reading, writing, speaking, and listening at the college and career readiness level.

Note on range and content of student language use

To build a foundation for college and career readiness in language, students must gain control over many conventions of grammar, usage, and mechanics as well as learn ways to use language to enhance meaning. They must also be able to determine or clarify the meaning of grade-appropriate words encountered through listening, reading, and media use, come to appreciate that words have nonliteral meanings, shadings of meaning, and relationships to other words, and expand their vocabulary in the course of studying content. The inclusion of Language standards in their own strand should not be taken as an indication that skills related to conventions, effective language use, and vocabulary are unimportant to reading, writing, speaking, and listening; indeed, they are inseparable from such contexts.

Language Standards K–5 [L]

The following standards for grades K–5 offer a focus for instruction each year to help ensure that students gain adequate mastery of a range of skills and applications. Students advancing through the grades are expected to meet each year's grade-specific standards and retain or further develop skills and understandings mastered in preceding grades. Beginning in grade 3, skills and understandings that are particularly likely to require continued attention in higher grades as they are applied to increasingly sophisticated writing and speaking are marked with an asterisk (*). See the table on page 31 for a complete list and Appendix A for an example of how these skills develop in sophistication.

Kindergartners:	**Grade 1 students:**	**Grade 2 students:**
Conventions		
1. Observe conventions of grammar and usage when writing or speaking. a. Print many upper- and lowercase letters. b. Use frequently occurring nouns and verbs. c. Form regular plural nouns orally by adding /s/ or /es/ (e.g., *dog*, *dogs*; *wish*, *wishes*). d. Understand and use question words (interrogatives) (e.g., *who*, *what*, *where*, *when*, *why*, *how*). e. Use the most frequently occurring prepositions (e.g., *to*, *from*, *in*, *out*, *on*, *off*, *for*, *of*, *by*, *with*). f. Produce and expand complete sentences in shared language activities.	**1.** Observe conventions of grammar and usage when writing or speaking. a. Print all upper- and lowercase letters. b. Use common, proper, and possessive nouns. c. Use singular and plural nouns with matching verbs in basic sentences (e.g., *He hops*; *We hop*). d. Use personal, possessive, and indefinite pronouns (e.g., *I*, *me*, *my*; *they*, *them*, *their*, *anyone*, *everything*). e. Use verbs to convey a sense of past, present, and future (e.g., *Yesterday I walked home*; *Today I walk home*; *Tomorrow I will walk home*). f . Use frequently occurring adjectives. g. Use frequently occurring conjunctions (e.g., *and*, *but*, *or*, *so*, *because*). g. Use determiners (e.g., articles, demonstratives). h. Use frequently occurring prepositions (e.g., *during*, *beyond*, *toward*). i. Produce and expand complete simple and compound declarative, interrogative, imperative, and exclamatory sentences in response to questions and prompts.	**1.** Observe conventions of grammar and usage when writing or speaking. a. Use collective nouns (e.g., *group*). b. Form and use frequently occurring irregular plural nouns (e.g., *feet*, *children*, *teeth*, *mice*, *fish*). c. Use reflexive pronouns (e.g., *myself*, *ourselves*). d. Form and use the past tense of frequently occurring irregular verbs (e.g., *sat*, *hid*, *told*). e. Use adjectives and adverbs, and choose between them depending on what is to be modified. f. Produce, expand, and rearrange complete simple and compound sentences (e.g., *The boy watched the movie*; *The little boy watched the movie*; *The action movie was watched by the little boy*).
2. Observe conventions of capitalization, punctuation, and spelling when writing. a. Capitalize the first word in a sentence and the pronoun *I*. b. Recognize and name end punctuation. c. Write a letter or letters for most consonant and short-vowel sounds (phonemes). d. Spell simple words phonetically, drawing on knowledge of sound-letter relationships.	**2.** Observe conventions of capitalization, punctuation, and spelling when writing. a. Capitalize dates and names of people. b. Use end punctuation for sentences. c. Use commas in dates and to separate single words in a series. d. Use conventional spelling for words with common spelling patterns and for frequently occurring irregular words. e. Spell untaught words phonetically, drawing on phonemic awareness and spelling conventions.	**2.** Observe conventions of capitalization, punctuation, and spelling when writing. a. Capitalize holidays, product names, and geographic names. b. Use commas in greetings and closings of letters. c. Use an apostrophe to form contractions and frequently occurring possessives. d. Generalize learned spelling patterns when writing words (e.g., *cage* → *badge*; *boy* → *boil*). e. Consult reference materials, including beginning dictionaries, as needed to check and correct spellings.
Effective Language Use		
3. (Begins in grade 3)	**3.** (Begins in grade 3)	**3.** (Begins in grade 3)

Kindergartners:	Grade 1 students:	Grade 2 students:
Vocabulary Acquisition and Use		
4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on ***kindergarten reading and content***. a. Identify new meanings for familiar words and apply them accurately (e.g., knowing *duck* as a bird and learning the verb *to duck*). b. Use the most frequently occurring inflections and affixes (e.g., *-ed*, *-s*, *re-*, *un-*, *pre-*, *-ful*, *-less*) as a clue to the meaning of an unknown word.	**4.** Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on ***grade 1 reading and content***, choosing flexibly from an array of strategies. a. Use sentence-level context as a clue to the meaning of a word or phrase. b. Use frequently occurring affixes as a clue to the meaning of a word. c. Identify frequently occurring root words (e.g., *look*) and their inflectional forms (e.g., *looks*, *looked*, *looking*).	**4.** Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on ***grade 2 reading and content***, choosing flexibly from an array of strategies. a. Use sentence-level context as a clue to the meaning of a word or phrase. b. Determine the meaning of the new word formed when a known prefix is added to a known word (e.g., *happy/unhappy*, *tell/retell*). c. Use a known root word as a clue to the meaning of an unknown word with the same root (e.g., *addition*, *additional*). d. Use knowledge of the meaning of individual words to predict the meaning of compound words (e.g., *birdhouse*, *lighthouse*, *housefly*; *bookshelf*, *notebook*, *bookmark*). e. Use glossaries and beginning dictionaries, both print and digital, to determine or clarify the meaning of words and phrases.
5. With guidance and support from adults, explore word relationships and nuances in word meanings. a. Sort common objects into categories (e.g., shapes, foods) to gain a sense of the concepts the categories represent. b. Demonstrate understanding of frequently occurring verbs and adjectives by relating them to their opposites (antonyms). c. Identify real-life connections between words and their use (e.g., note places at school that are *colorful*). d. Distinguish shades of meaning among verbs describing the same general action (e.g., *walk*, *march*, *strut*, *prance*) by acting out the meanings.	**5.** With guidance and support from adults, demonstrate understanding of word relationships and nuances in word meanings. a. Sort words into categories (e.g., colors, clothing) to gain a sense of the concepts the categories represent. b. Define words by category and by one or more key attributes (e.g., a *duck* is a bird that swims; a *tiger* is a large cat with stripes). c. Identify real-life connections between words and their use (e.g., note places at home that are *cozy*). d. Distinguish shades of meaning among verbs differing in manner (e.g., *look*, *peek*, *glance*, *stare*, *glare*, *scowl*) and adjectives differing in intensity (e.g., *large*, *gigantic*) by defining or choosing them or by acting out the meanings.	**5.** Demonstrate understanding of word relationships and nuances in word meanings. a. Identify real-life connections between words and their use (e.g., describe foods that *are spicy* or *juicy*). b. Distinguish shades of meaning among closely related verbs (e.g., *toss*, *throw*, *hurl*) and closely related adjectives (e.g., *thin*, *slender*, *skinny, scrawny*).
6. Use words and phrases acquired through conversations, reading and being read to, and responding to texts.	**6.** Use words and phrases acquired through conversations, reading and being read to, and responding to texts, including using frequently occurring conjunctions to signal simple relationships (e.g., *I named my hamster Nibblet because she nibbles too much because she likes that*).	**6.** Use words and phrases acquired through conversations, reading and being read to, and responding to texts, including using adjectives and adverbs to describe (e.g., *When other kids are happy that makes me happy*).

Grade 3 students:	Grade 4 students:	Grade 5 students:
Conventions		
1. Observe conventions of grammar and usage when writing or speaking. a. Explain the function of nouns, pronouns, verbs, adjectives, and adverbs in general and their functions in particular sentences. b. Form and use regular and irregular plural nouns. c. Use abstract nouns (e.g., *childhood*). d. Form and use regular and irregular verbs. e. Form and use the simple (e.g., *I walked*; *I walk*; *I will walk*) verb tenses. f. Ensure subject-verb and pronoun-antecedent agreement.* g. Form and use comparative and superlative adjectives and adverbs, and choose between them depending on what is to be modified. h. Use coordinating and subordinating conjunctions. i. Produce simple, compound, and complex sentences.	**1.** Observe conventions of grammar and usage when writing or speaking. a. Use relative pronouns (*who*, *whose*, *whom*, *which*, *that*) and relative adverbs (*where*, *when*, *why*). b. Form and use the progressive (e.g., *I was walking*; *I am walking*; *I will be walking*) verb aspects. c. Use modal auxiliaries (e.g., *can*, *may*, *must*) to convey various conditions. d. Order adjectives within sentences according to conventional patterns (e.g., *a small red bag* rather than *a red small bag*). e. Form and use prepositional phrases. f. Produce complete sentences, recognizing and correcting rhetorically poor fragments and run-ons.* g. Correctly use frequently confused words (e.g., *to*, *too*, *two*; *there*, *their*).*	**1.** Observe conventions of grammar and usage when writing or speaking. a. Explain the function of conjunctions, prepositions, and interjections in general and their function in particular sentences. b. Form and use the perfect (e.g., *I had walked*; *I have walked*; *I will have walked*) verb aspects. c. Use verb tense and aspect to convey various times, sequences, states, and conditions. d. Recognize and correct inappropriate shifts in verb tense and aspect.* e. Use correlative conjunctions.
2. Observe conventions of capitalization, punctuation, and spelling when writing. a. Capitalize important words in titles. b. Use commas in addresses. c. Use commas and quotation marks in dialogue. d. Form and use possessives. e. Use conventional spelling for high-frequency and other studied words and for adding suffixes to base words (e.g., *sitting*, *smiled*, *cries*, *happiness*). f. Use spelling patterns and generalizations (e.g., word families, position-based spellings, syllable patterns, ending rules, meaningful word parts) in writing words. g. Consult reference materials, including beginning dictionaries, as needed to check and correct spellings.	**2.** Observe conventions of capitalization, punctuation, and spelling when writing. a. Use correct capitalization. b. Use commas and quotation marks to mark direct speech and quotations from a text. c. Use a comma before a coordinating conjunction in a compound sentence. d. Spell grade-appropriate words correctly, consulting references as needed.	**2.** Observe conventions of capitalization, punctuation, and spelling when writing. a. Use punctuation to separate items in a series.* b. Use a comma to separate an introductory element from the rest of the sentence. c. Use a comma to set off the words *yes* and *no* (e.g., *Yes, thank you*), to set off a tag question from the rest of the sentence (e.g., *It's true, isn't it?*), and to indicate direct address (e.g., *Is that you, Steve?*). d. Use underlining, quotation marks, or italics to indicate titles of works. e. Spell grade-appropriate words correctly, consulting references as needed.
Effective Language Use		
3. Use language to achieve particular effects when writing or speaking. a. Choose words and phrases for effect.*	**3.** Use language to enhance meaning and achieve particular effects when writing or speaking. a. Choose words and phrases to convey ideas precisely.* b. Use punctuation for effect.*	**3.** Use language to enhance meaning, convey style, and achieve particular effects when writing or speaking. a. Expand, combine, and reduce sentences for meaning, reader/listener interest, and style.

Grade 3 students:	Grade 4 students:	Grade 5 students:
Vocabulary Acquisition and Use		
4. Determine or clarify the meaning of unknown and multiple-meaning word and phrases based on *grade 3 reading and content*, choosing flexibly from a range of strategies. a. Use sentence-level context as a clue to the meaning of a word or phrase. b. Determine the meaning of the new word formed when a known affix is added to a known word (e.g., *agreeable/disagreeable*, *comfortable/uncomfortable*, *care/careless*, *heat/preheat*). c. Use a known root word as a clue to the meaning of an unknown word with the same root (e.g., *company*, *companion*). d. Use glossaries or beginning dictionaries, both print and digital, to determine or clarify the precise meaning of key words and phrases.	**4.** Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on *grade 4 reading and content*, choosing flexibly from a range of strategies. a. Use context (e.g., definitions, examples, or restatements in text) as a clue to the meaning of a word or phrase. b. Use common, grade-appropriate Greek and Latin affixes and roots as clues to the meaning of a word (e.g., *telegraph*, *photograph*, *autograph*). c. Consult reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation and determine or clarify the precise meaning of key words and phrases.	**4.** Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on *grade 5 reading and content*, choosing flexibly from a range of strategies. a. Use context (e.g., cause/effect relationships and comparisons in text) as a clue to the meaning of a word or phrase. b. Use common, grade-appropriate Greek and Latin affixes and roots as clues to the meaning of a word (e.g., *photograph*, *photosynthesis*). c. Consult reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation and determine or clarify the precise meaning of key words and phrases.
5. Demonstrate understanding of word relationships *and* nuances in word meanings. a. Distinguish the literal and nonliteral meanings of words and phrases in context (e.g., *take steps*). b. Identify real-life connections between words and their use (e.g., describe people who are *friendly* or *helpful*). c. Distinguish shades of meaning among related words that describe states of mind or degrees of certainty (e.g., *knew*, *believed*, *suspected*, *heard*, *wondered*).	**5.** Demonstrate understanding of figurative language, word relationships, and nuances in word meanings. a. Explain the meaning of simple similes and metaphors (e.g., *as pretty as a picture*) in context. b. Recognize and explain the meaning of common idioms, adages, and proverbs. c. Demonstrate understanding of words by relating them to their opposites (antonyms) and to words with similar but not identical meanings (synonyms).	**5.** Demonstrate understanding of figurative language, word relationships, and nuances in word meanings. a. Interpret figurative language, including similes and metaphors, in context. b. Recognize and explain the meaning of common idioms, adages, and proverbs. c. Use the relationship between particular words (e.g., synonyms, antonyms, homographs) to better understand each of the words.
6. Acquire and use accurately grade-appropriate conversational, general academic, and domain-specific vocabulary, including words and phrases that signal spatial and temporal relationships (e.g., *After dinner that night we went looking for them*).	**6.** Acquire and use accurately grade-appropriate general academic and domain-specific vocabulary, including words and phrases that signal precise actions, emotions, or states of being (e.g., *quizzed*, *whined*, *stammered*) and words and phrases basic to a particular topic (e.g., *wildlife*, *conservation*, and *endangered* when discussing animal preservation).	**6.** Acquire and use accurately grade-appropriate general academic and domain-specific vocabulary, including words and phrases that signal contrast, addition, and other logical relationships (e.g., *however*, *although*, *nevertheless*, *similarly*, *moreover*, *in addition*).

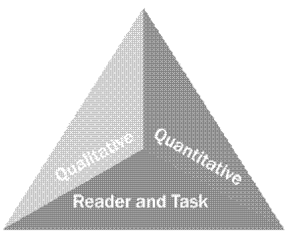
Language Progressive Skills, by Grade

The following skills, marked with an asterisk (*) in Language standards 1–3, are particularly likely to require continued attention in higher grades as they are applied to increasingly sophisticated writing and speaking.

Skill	3	4	5	6	7	8	9–10	11–12
Ensure subject-verb and pronoun-antecedent agreement.	■	■	■	■	■	■	■	■
Choose words and phrases for effect.	■	■	■	■	■	■	■	■
Produce complete sentences, recognizing and correcting rhetorically poor fragments and run-ons.		■	■	■	■	■	■	■
Correctly use frequently confused words (e.g., *to/too/two*; *there/their*).		■	■	■	■	■	■	■
Choose words and phrases to convey ideas precisely.		■	■	■				
Use punctuation for effect.		■	■	■	■	■	■	■
Recognize and correct inappropriate shifts in verb tense and aspect.			■	■	■	■	■	■
Use punctuation to separate items in a series.			■	■	■	■		
Recognize and correct inappropriate shifts in pronoun number and person.				■	■	■	■	■
Recognize and correct vague pronouns (i.e., ones with unclear or ambiguous antecedents).				■	■	■	■	■
Recognize variations from standard English in their own and others' writing and speaking, and identify and use strategies to improve expression in conventional language.				■	■	■	■	■
Use punctuation (commas, parentheses, dashes) to set off nonrestrictive/parenthetical elements.				■	■	■	■	■
Vary sentence patterns for meaning, reader/listener interest, and style.				■	■	■	■	
Maintain consistency in style and tone.				■	■	■	■	■
Place phrases and clauses within a sentence, recognizing and correcting misplaced and dangling modifiers.					■	■	■	■
Choose language that expresses ideas precisely and concisely, eliminating wordiness and redundancy.						■	■	■
Recognize and correct inappropriate shifts in verb voice and mood.						■	■	■
Use parallel structure.							■	■

Standard 10: Range, Quality, and Complexity of Student Reading K–5

Measuring Text Complexity: Three Factors



Qualitative evaluation of the text: Levels of meaning, structure, language conventionality and clarity, and knowledge demands

Quantitative evaluation of the text: Readability measures and other scores of text complexity

Matching reader to text and task: Reader knowledge, motivation, and interests as well as the complexity generated by the tasks assigned and the questions posed

Note: More detailed information on text complexity and how it is measured is contained in Appendix A.

Range of Text Types for K–5

Students in K–5 apply the Reading standards to the following range of text types, with texts selected from a broad range of cultures and periods.

Literature			Informational Text
Stories	**Dramas**	**Poetry**	**Literary Nonfiction and Historical, Scientific, and Technical Texts**
Includes children's adventure stories, folktales, legends, fables, fantasy, realistic fiction, and myth	Includes staged dialogue and brief familiar scenes	Includes nursery rhymes and the subgenres of the narrative poem, limerick, and free verse poem	Includes biographies and autobiographies; books about history, social studies, science, and the arts; technical texts, including directions, forms, and information displayed in graphs, charts, or maps; and digital sources on a range of topics

* Read-aloud
** Read-along

Texts Illustrating the Complexity, Quality, and Range of Student Reading K–5

	Literature: Stories, Drama, Poetry	Informational Texts: Literary Nonfiction and Historical, Scientific, and Technical Texts
K[1]	▪ *Over in the Meadow* by John Langstaff (traditional) (c1800)* ▪ *A Boy, a Dog, and a Frog* by Mercer Mayer (1967) ▪ *Pancakes for Breakfast* by Tomie DePaola (1978) ▪ *A Story A Story* by Gail E. Haley (1970)* ▪ *Kitten's First Full Moon* by Kevin Henkes (2004)*	▪ *My Five Senses* by Aliki (1962)* ▪ *Truck* by Donald Crews (1980) ▪ *I Read Signs* by Tana Hoban (1987) ▪ *What Do You Do With a Tail Like This?* by Steve Jenkins and Robin Page (2003)* ▪ *Amazing Whales!* by Sarah L. Thomson (2005)*
1[1]	▪ "Mix a Pancake" by Christina G. Rossetti (1893)** ▪ *Mr. Popper's Penguins* by Richard Atwater (1938)* ▪ *Little Bear* by Else Holmelund Minarik, illustrated by Maurice Sendak (1957)** ▪ *Frog and Toad Together* by Arnold Lobel (1971)** ▪ *Hi! Fly Guy* by Tedd Arnold (2006)	▪ *A Tree Is a Plant* by Clyde Robert Bulla, illustrated by Stacey Schuett (1960)** ▪ *My Five Senses* by Aliki (1962)** ▪ *Follow the Water from Brook to Ocean* by Arthur Dorros (1991)** ▪ *From Seed to Pumpkin* by Wendy Pfeffer, illustrated by James Graham Hale (2004)* ▪ *How People Learned to Fly* by Fran Hodgkins and True Kelley (2007)*
2–3	▪ "Who Has Seen the Wind?" by Christina G. Rossetti (1893) ▪ *Charlotte's Web* by E. B. White (1952)* ▪ *Sarah, Plain and Tall* by Patricia MacLachlan (1985) ▪ *Tops and Bottoms* by Janet Stevens (1995) ▪ *Poppleton in Winter* by Cynthia Rylant, illustrated by Mark Teague (2001)	▪ *A Medieval Feast* by Aliki (1983) ▪ *From Seed to Plant* by Gail Gibbons (1991) ▪ *The Story of Ruby Bridges* by Robert Coles (1995)* ▪ *A Drop of Water: A Book of Science and Wonder* by Walter Wick (1997) ▪ *Moonshot: The Flight of Apollo 11* by Brian Floca (2009)
4–5	• *Alice's Adventures in Wonderland* by Lewis Carroll (1865) • "Casey at the Bat" by Ernest Lawrence Thayer (1888) • *The Black Stallion* by Walter Farley (1941) • "Zlateh the Goat" by Isaac Bashevis Singer (1984) ▪ *Bud, Not Buddy* by Christopher Paul Curtis (1999) ▪ *The Birchbark House* by Louise Erdrich (1999) ▪ *Where the Mountain Meets the Moon* by Grace Lin (2009)	▪ *Discovering Mars* by Melvin Berger (1992) ▪ *Hurricanes: Earth's Mightiest Storms* by Patricia Lauber (1996) ▪ *A History of US* by Joy Hakim (2005) ▪ *Horses* by Seymour Simon (2006) ▪ *Quest for the Tree Kangaroo: An Expedition to the Cloud Forest of New Guinea* by Sy Montgomery (2006)

Note: Given space limitations, the illustrative texts listed above are meant only to show individual titles that are representative of a wide range of topics and genres. (See Appendix B for excerpts of these and other texts illustrative of K–5 text complexity, quality, and range.) At a curricular or instructional level, within and across grade levels, texts need to be selected around topics or themes that generate knowledge and allow students to study those topics or themes in depth. On the next page is an example of progressions of texts building knowledge across grade levels.

[1]Children at the kindergarten and grade 1 levels should be expected to read texts independently that have been specifically written to correlate to their reading level and their word knowledge. Many of the titles listed above are meant to supplement carefully structured independent reading with books to read along with a teacher or that are read aloud to students to build knowledge and cultivate a joy in reading.

Staying on Topic Within a Grade and Across Grades:
How to Build Knowledge Systematically in English Language Arts K–5

Building knowledge systematically in English language arts is like giving children various pieces of a puzzle in each grade that, over time, will form one big picture. At a curricular or instructional level, texts—within and across grade levels—need to be selected around topics or themes that systematically develop the knowledge base of students. Within a grade level, there should be an adequate number of titles on a single topic that would allow children to study that topic for a sustained period. The knowledge children have learned about particular topics in early grade levels should then be expanded and developed in subsequent grade levels to ensure an increasingly deeper understanding of these topics. Children in the upper elementary grades will generally be expected to read these texts independently and reflect on them in writing. However, children in the early grades (particularly K–2) should participate in rich, structured conversations with an adult in response to the written texts that are read aloud, *orally* comparing and contrasting as well as analyzing and synthesizing, in the manner called for by the *Standards*.

Preparation for reading complex informational texts should begin at the very earliest elementary school grades. What follows is one example that uses domain-specific nonfiction titles across grade levels to illustrate how curriculum designers and classroom teachers can infuse the English language arts block with rich, age-appropriate content knowledge and vocabulary in history/social studies, science, and the arts. Having students listen to informational read-alouds in the early grades helps lay the necessary foundation for students' reading and understanding of increasingly complex texts on their own in subsequent grades.

Exemplar Texts on a Topic Across Grades	K	1	2–3	4–5
The Human Body Students can begin learning about the human body starting in kindergarten and then review and extend their learning during each subsequent grade.	The five senses and associated body parts ▪ *My Five Senses* by Aliki (1989) ▪ *Hearing* by Maria Rius (1985) ▪ *Sight* by Maria Rius (1985) ▪ *Smell* by Maria Rius (1985) ▪ *Taste* by Maria Rius (1985) ▪ *Touch* by Maria Rius (1985) Taking care of your body: Overview (hygiene, diet, exercise, rest) ▪ *My Amazing Body: A First Look at Health & Fitness* by Pat Thomas (2001) ▪ *Get Up and Go!* by Nancy Carlson (2008) ▪ *Go Wash Up* by Doering Tourville (2008) ▪ *Sleep* by Paul Showers (1997) ▪ *Fuel the Body* by Doering Tourville (2008)	Introduction to the systems of the human body and associated body parts ▪ *Under Your Skin: Your Amazing Body* by Mick Manning (2007) ▪ *Me and My Amazing Body* by Joan Sweeney (1999) ▪ *The Human Body* by Gallimard Jeunesse (2007) ▪ *The Busy Body Book* by Lizzy Rockwell (2008) ▪ *First Encyclopedia of the Human Body* by Fiona Chandler (2004) Taking care of your body: Germs, diseases, and preventing illness ▪ *Germs Make Me Sick* by Marilyn Berger (1995) ▪ *Tiny Life on Your Body* by Christine Taylor-Butler (2005) ▪ *Germ Stories* by Arthur Kornberg (2007) ▪ *All About Scabs* by GenichiroYagu (1998)	Digestive and excretory systems ▪ *What Happens to a Hamburger* by Paul Showers (1985) ▪ *The Digestive System* by Christine Taylor-Butler (2008) ▪ *The Digestive System* by Rebecca L. Johnson (2006) ▪ *The Digestive System* by Kristin Petrie (2007) Taking care of your body: healthy eating and nutrition ▪ *Good Enough to Eat* by Lizzy Rockwell (1999) ▪ *Showdown at the Food Pyramid* by Rex Barron (2004) Muscular, skeletal, and nervous systems ▪ *The Mighty Muscular and Skeletal Systems* Crabtree Publishing (2009) ▪ *Muscles* by Seymour Simon (1998) ▪ *Bones* by Seymour Simon (1998) ▪ *The Astounding Nervous System* Crabtree Publishing (2009) ▪ *The Nervous System* by Joelle Riley (2004)	Circulatory system ▪ *The Heart* by Seymour Simon (2006) ▪ *The Heart and Circulation* by Carol Ballard (2005) ▪ *The Circulatory System* by Kristin Petrie (2007) ▪ *The Amazing Circulatory System* by John Burstein (2009) Respiratory system ▪ *The Lungs* by Seymour Simon (2007) ▪ *The Respiratory System* by Susan Glass (2004) ▪ *The Respiratory System* by Kristin Petrie (2007) ▪ *The Remarkable Respiratory System* by John Burstein (2009) Endocrine system ▪ *The Endocrine System* by Rebecca Olien (2006) ▪ *The Exciting Endocrine System* by John Burstein (2009)

Standards for English Language Arts

6–12

College and Career Readiness Anchor Standards for Reading

The grades 6–12 standards on the following pages define what students should understand and be able to do by the end of each grade. They relate to their College and Career Readiness (CCR) counterparts by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

Key Ideas and Details

1. Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.
2. Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.
3. Analyze how and why individuals, events, and ideas develop and interact over the course of a text.

Craft and Structure

4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.
5. Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole.
6. Assess how point of view or purpose shapes the content and style of a text.

Integration of Knowledge and Ideas

7. Integrate and evaluate content presented graphically, visually, orally, and multimodally as well as in words within and across print and digital sources. *
8. Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.
9. Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.

Range of Reading and Level of Text Complexity

10. Read and comprehend complex literary and informational texts independently and proficiently.

*Please see "Research to Build Knowledge" in Writing and "Comprehension and Collaboration" in Speaking and Listening for additional standards relevant to gathering, assessing, and applying information from print and digital sources.

Note on range and content of student reading

To become college and career ready, students must grapple with works of exceptional craft and thought whose range extends across genres, cultures, and centuries. Such works offer profound insights into the human condition and serve as models for students' own thinking and writing. Along with high-quality contemporary works, these texts should be chosen from among seminal U.S. documents, the classics of American literature, and the timeless dramas of Shakespeare. Through wide and deep reading of literature and literary nonfiction of steadily increasing sophistication, students gain a reservoir of literary and cultural knowledge, references, and images; the ability to evaluate intricate arguments; and the capacity to surmount the challenges posed by complex texts.

Reading Standards for Literature 6–12

[RL]

The following standards offer a focus for instruction each year and help ensure that students gain adequate exposure to a range of texts and tasks. Rigor is also infused through the requirement that students read increasingly complex texts through the grades. Students advancing through the grades are expected to meet each year's grade-specific standards and retain or further develop skills and understandings mastered in preceding grades.

Grade 6 students:	Grade 7 students:	Grade 8 students:
Key Ideas and Details		
1. Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	**1.** Cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	**1.** Cite the textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text.
2. Determine a theme or central idea of a text and analyze its development over the course of the text; summarize the text.	**2.** Determine a theme or central idea of a text and analyze its development over the course of the text, including its relationship to the characters, setting, and plot; summarize the text.	**2.** Determine a theme or central idea of a text and analyze its development over the course of the text, including how it is conveyed through particular details; provide an accurate summary of the text distinct from personal opinions or judgments.
3. Describe how a particular story's or drama's plot unfolds in a series of episodes as well as how the characters respond or change as the plot moves toward a resolution.	**3.** Analyze how particular elements of a story or drama interact (e.g., how setting shapes the characters or plot).	**3.** Analyze how particular lines of dialogue or incidents in a story or drama propel the action, reveal aspects of a character, or provoke a decision.
Craft and Structure		
4. Determine the meaning of words and phrases as they are used in a text, including figures of speech and the connotations (associations) of particular words and phrases; analyze the impact of a specific word choice on meaning and tone.	**4.** Determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings; analyze the impact of rhymes and other repetitions of sounds (e.g., alliteration) on a specific verse or stanza of a poem or section of a story or drama.	4. Determine the meaning of words and phrases as they are used in a text, including analogies or allusions to other texts; analyze the impact of specific word choices on meaning and tone.
5. Analyze how a particular sentence, chapter, scene, or stanza fits into the overall structure of a text and contributes to the development of the theme, setting, or plot.	**5.** Analyze how a drama's or poem's form or structure (e.g. sonnet, soliloquy) contributes to its meaning.	**5.** Compare and contrast the structure of two or more texts and analyze how the differing structure of each text contributes to its meaning and style.
6. Explain how an author establishes and develops the point of view of the narrator or speaker in a text.	**6.** Analyze how an author establishes and contrasts the points of view of different characters or narrators in a text.	**6.** Explain how differences in the point of view of characters and the audience or reader (e.g., created through the use of dramatic irony) creates such effects as suspense or humor.
Integration of Knowledge and Ideas		
7. Compare and contrast the experience of reading a story, poem, or dram to listening to or viewing an audio, video, or live version of the text, including contrasting what they "see" and "hear" when reading the text to what they perceive when they listen or watch.	**7.** Compare and contrast a story, poem, or drama to its audio, filmed, staged, or multimedia version, analyzing the effects of techniques unique to each medium (e.g., lighting, sound, color, camera focus and angles).	**7.** Analyze the extent to which a filmed or live production of a story or drama stays faithful to or departs from the text or script, evaluating the choices made by the director or actors.
8. (Not applicable to literature)	**8.** (Not applicable to literature)	**8.** (Not applicable to literature)

Grade 6 students:	Grade 7 students:	Grade 8 students:
Integration of Knowledge and Ideas		
9. Compare and contrast texts in different forms or genres (e.g., stories and poems; historical novels and fantasy stories) in terms of their approaches to similar themes and topics.	**9.** Compare and contrast a fictional portrayal of a time, place, or character and a historical account of the same period as a means of understanding how authors of fiction use or alter history.	**9.** Analyze how a modern work of fiction draws on themes, patterns of events, or character types from myths, traditional stories, or religious works such as the Bible, including describing how the material is rendered new.
Range of Reading and Level of Text Complexity		
10. By the end of the year, read and comprehend literature, including stories, dramas, and poems, in the grades 6–8 text complexity band proficiently, with scaffolding as needed at the high end of the range.	**10.** By the end of the year, read and comprehend literature, including stories, dramas, and poems, in the grades 6–8 text complexity band proficiently, with scaffolding as necessary at the high end of the range.	**10.** By the end of the year, read and comprehend literature, including stories, dramas, and poems, in the grades 6–8 text complexity band independently and proficiently.

Grades 9–10 students:	Grades 11–12 students:
Key Ideas and Details	
1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	**1.** Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.
2. Determine a theme or central idea of a text and analyze in detail its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text.	**2.** Determine two or more themes or central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to produce a complex account; provide an objective summary of the text.
3. Analyze how complex characters (e.g., those with multiple or conflicting motivations) develop over the course of a text, interact with other characters, and advance the plot or develop the theme.	**3.** Evaluate various explanations for characters' actions or for events and determine which explanation best accords with textual evidence, acknowledging where the text leaves matters uncertain.
Craft and Structure	
4. Determine the meaning of words and phrases as they are used in the text and analyze the cumulative impact of several word choices on meaning and tone (e.g., how the language evokes a sense of time and place; how it sets a formal or informal tone).	**4.** Determine the meaning of words and phrases as they are used in the text and analyze the impact of specific word choices on meaning and tone, including words with multiple meanings or language that is particularly fresh, engaging, or beautiful. (Include Shakespeare as well as other authors.)
5. Analyze how an author's choices concerning how to structure a text, order events within it (e.g., parallel plots), and manipulate time (e.g., pacing, flashbacks) create such effects as mystery, tension, or surprise.	**5.** Analyze how an author's choices concerning how to structure specific parts of a text (e.g., the choice at what point to begin or end a story, the choice to provide a comedic or tragic resolution) contribute to its overall structure and meaning as well as its aesthetic impact.
6. Analyze a case in which grasping point of view requires distinguishing what is directly stated from what is implied (e.g., through the use of satire, sarcasm, irony, or understatement).	**6.** Analyze differences and similarities in points of view or cultural experience as reflected in various works from different countries, drawing on a wide reading of world literature.
Integration of Knowledge and Ideas	
7. Analyze the representation of a subject or a key scene in two different artistic mediums, including what is emphasized or absent in each treatment (e.g., Auden's "Musée des Beaux Arts" and Breughel's *Landscape with the Fall of Icarus*).	**7.** Analyze multiple interpretations of a story or drama (e.g., recorded or live production of a play or novel), evaluating how each version interprets the source text. (Include at least one play by Shakespeare as well as one play by an American dramatist.)
8. (Not applicable to literature)	**8.** (Not applicable to literature)
9. Demonstrate knowledge of eighteenth-, nineteenth- and early-twentieth-century foundational works of American literature, drawing on how two or more texts from the same period treat similar themes or topics.	**9.** Analyze how an author draws on and transforms source material in a specific work (e.g., how Shakespeare draws on Ovid or the Bible or how a later author draws on a play by Shakespeare) in order to evaluate how the texts treat similar themes or topics.
Range of Reading and Level of Text Complexity	
10. By the end of grade 9, read and comprehend literature, including stories, dramas, and poems, in the grades 9–10 text complexity band proficiently, with scaffolding as needed at the high end of the range. By the end of grade 10, read and comprehend literature, including stories, dramas, and poems, in the grades 9–10 text complexity band independently and proficiently.	**10.** By the end of grade 11, read and comprehend literature, including stories, dramas, and poems, in the grades 11–CCR text complexity band proficiently, with scaffolding as needed at the high end of the range. By the end of grade 12, read and comprehend literature, including stories, dramas, and poems, in the grades 11–CCR text complexity band independently and proficiently.

Grade 6 students:	Grade 7 students:	Grade 8 students:
Key Ideas and Details		
1. Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	**1.** Cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	**1.** Cite the textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text.
2. Determine a central idea of a text and analyze its development over the course of the text; summarize the text.	**2.** Determine two or more central ideas in a text and analyze their development over the course of the text and their relationship to one another; summarize the text.	**2.** Determine a central idea of a text and analyze its development over the course of the text, including how it is conveyed through particular details; provide an accurate summary of the text distinct from personal opinions or judgments.
3. Analyze in detail how a key individual, event, or idea is introduced, illustrated, and elaborated in a text (e.g., through examples or anecdotes).	**3.** Analyze the interactions between individuals, events, and ideas in a text (e.g., how ideas influence individuals or events, or how individuals influence ideas or events).	**3.** Analyze how a text makes connections among and distinctions between key individuals, ideas, or events (e.g., through comparisons, analogies, or categories).
Craft and Structure		
4. Determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings; analyze the impact of a specific word choice on meaning and tone.	**4.** Determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings; analyze the impact of a specific word choice on meaning and tone.	**4.** Determine the meaning of words and phrases as they are used in a text, including analogies or allusions to other texts; analyze the impact of specific word choices on meaning and tone.
5. Analyze how a particular sentence, paragraph, chapter, or section fits into the overall structure of a text and contributes to the development of the ideas.	**5.** Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to the development of the ideas.	**5.** Analyze in detail the structure of a specific paragraph in a text, including the role of particular sentences in developing and refining a key concept.
6. Determine an author's point of view or purpose in a text and explain how it is conveyed in the text.	**6.** Determine an author's point of view or purpose in a text and analyze how the author distinguishes his or her point of view from that of others.	**6.** Determine an author's point of view or purpose in a text and analyze how the author acknowledges and responds to conflicting evidence or viewpoints.
Integration of Knowledge and Ideas		
7. Integrate information presented in different formats (e.g., print or digital text, video, multimedia) to develop a coherent understanding of a topic or issue.	**7.** Compare and contrast the experience of reading a text to experiencing an audio, video, or multimedia version of it, analyzing the text's portrayal in each medium (e.g., how the delivery of a speech affects the impact of the words).	**7.** Evaluate the advantages and disadvantages of using different mediums (e.g., print or digital text, video, multimedia) to present a particular topic or idea.
8. Delineate and evaluate the argument and specific claims in a text, distinguishing claims that are supported by reasons and evidence from claims that are not.	**8.** Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is sufficient to support the claims.	**8.** Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient and identifying when irrelevant evidence is introduced.
9. Compare and contrast one author's presentation of events with that of another (e.g., a memoir written by and a biography on the same person).	**9.** Analyze how two or more authors writing about the same topic shape their presentations of key information by emphasizing different evidence or advancing different interpretations of facts.	**9.** Analyze a case in which two or more texts provide conflicting information on the same topic and identify where the texts disagree on matters of fact or interpretation.

Grade 6 students:	Grade 7 students:	Grade 8 students:
Range of Reading and Level of Text Complexity		
10. By the end of the year, read and comprehend literary nonfiction in the grades 6–8 text complexity band proficiently, with scaffolding as needed at the high end of the range.	**10.** By the end of the year, read and comprehend literary nonfiction in the grades 6–8 text complexity band proficiently, with scaffolding as needed at the high end of the range.	**10.** By the end of the year, read and comprehend literary nonfiction in the grades 6–8 text complexity band independently and proficiently.

Grades 9–10 students:	Grades 11–12 students:
Key Ideas and Details	
1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	**1.** Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.
2. Determine a central idea of a text and analyze its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text.	**2.** Determine two or more central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to provide a complex analysis; provide an objective summary of the text.
3. Analyze how the author unfolds an analysis or series of ideas or events, including the order in which the points are made, how they are introduced and developed, and the connections that are drawn between them.	**3.** Analyze a complex set of ideas or sequence of events and explain how specific individuals, ideas, or events interact and develop over the course of the text.
Craft and Structure	
4. Determine the meaning of words and phrases as they are used in a text and analyze the cumulative impact of several word choices on meaning and tone (e.g., how the language of a court opinion differs from that of a newspaper).	**4.** Determine the meaning of words and phrases as they are used in a text and analyze how an author uses and refines the meaning of a key term or terms over the course of a text (e.g., how Madison defines *faction* in *Federalist* No. 10).
5. Analyze in detail how an author's ideas or claims are developed and refined by particular sentences, paragraphs, or larger portions of a text (e.g., a section or chapter).	**5.** Analyze and evaluate the effectiveness of the structure an author uses in his or her exposition or argument, including whether the structure makes points clear, convincing, and engaging.
6. Analyze documents of historical and literary significance, including seminal U.S. documents (e.g., the Declaration of Independence, the Preamble to the Constitution, the Bill of Rights), for their premises and purposes.	**6.** Analyze how various authors express different points of view on similar events or issues, assessing the authors' assumptions, use of evidence, and reasoning, including analyzing seminal U.S. documents (e.g., *The Federalist*, landmark U.S. Supreme Court majority opinions and dissents).
Integration of Knowledge and Ideas	
7. Evaluate the accounts of a subject in different mediums (e.g., a person's life story told in print or digital text, film, or multimedia), analyzing each version for which details are emphasized and how the account unfolds.	**7.** Integrate and evaluate multiple sources of information presented in different formats (e.g., print or digital text, video, multimedia) in order to address a question or solve a problem, resolving conflicting information when possible.
8. Delineate and evaluate the argument and claims in a text, assessing the relevance and sufficiency of the evidence and the validity of the reasoning and identifying false statements and fallacious reasoning.	**8.** Delineate and evaluate the argument and claims in a text, assessing the relevance and sufficiency of the evidence and the validity of the reasoning, identifying and evaluating stated and unstated premises and assumptions.
9. Analyze a case in which authors disagree with or otherwise respond to one another's ideas or accounts of events, evaluating the strength of each author's evidence, reasoning, and interpretation.	**9.** Synthesize information, explanations, and arguments from a range of sources to provide a coherent account of events or ideas, resolving conflicting information when possible.
Range of Reading and Level of Text Complexity	
10. By the end of grade 9, read and comprehend literary nonfiction in the grades 9–10 text complexity band proficiently, with scaffolding as needed at the high end of the range. By the end of grade 10, read and comprehend literary nonfiction in the grades 9–10 text complexity band independently and proficiently.	**10.** By the end of grade 11, read and comprehend literary nonfiction in the grades 11–CCR text complexity band proficiently, with scaffolding as needed at the high end of the range. By the end of grade 12, read and comprehend literary nonfiction in the grades 11–CCR text complexity band independently and proficiently.

College and Career Readiness Anchor Standards for Writing

The grades 6–12 standards on the following pages define what students should understand and be able to do by the end of each grade. They relate to their College and Career Readiness (CCR) counterparts by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

Text Types and Purposes[1]

1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.
2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.
3. Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.

Production and Distribution of Writing

4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.[2]
6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

Research to Build and Present Knowledge

7. Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.
8. Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.
9. Draw evidence from literary or informational texts to support analysis, reflection, and research.

Range of Writing

10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

[1]These broad types of writing include many subgenres. See Appendix A for definitions of key writing types.
[2]See standards 1–3 in Language, pages 53–57, for specific editing expectations.

Note on range and content of student writing

For students, writing is a key means of asserting and defending claims, showing what they know about a subject, and conveying what they have experienced, imagined, thought, and felt. To be college- and career-ready writers, students must take task, purpose, and audience into careful consideration, choosing words, information, structures, and formats deliberately. They need to know how to combine elements of different kinds of writing—for example, to use narrative strategies within argument and explanation within narrative—to produce complex and nuanced writing. They need to be able to use technology strategically when creating, refining, and collaborating on writing. They have to become adept at gathering information, evaluating sources, and citing material accurately, reporting findings from their research and analysis of sources in a clear and cogent manner. They must have the flexibility, concentration, and fluency to produce high-quality first-draft text under a tight deadline as well as the capacity to revisit and make improvements to a piece of writing over multiple drafts when circumstances encourage or require it.

Writing Standards 6–12 [W]

The following standards for grades 6–12 offer a focus for instruction each year to help ensure that students gain adequate mastery of a range of skills and applications. Each year in their writing, students should demonstrate increasing sophistication in all aspects of language use, from vocabulary and syntax to the development and organization of ideas, and they should address increasingly demanding content and sources. Students advancing through the grades are expected to meet each year's grade-specific standards and retain or further develop skills and understandings mastered in preceding grades. The expected growth in student writing ability is reflected both in the standards themselves and in the collection of annotated student writing samples in Appendix C.

Grade 6 students:	Grade 7 students:	Grade 8 students:
Text Types and Purposes		
1. Write arguments to support claims with clear reasons and relevant evidence. a. Introduce claim(s) and organize the reasons and evidence clearly. b. Support claim(s) with clear reasons and relevant evidence, demonstrating an understanding of the topic or text. c. Use words, phrases, and clauses to clarify the relationships among claim(s) and reasons. d. Establish and maintain a formal style. e. Provide a concluding statement or section that follows from the argument presented.	**1.** Write arguments to support claims with clear reasons and relevant evidence. a. Introduce claim(s), acknowledge alternate or opposing claims, and organize the reasons and evidence logically. b. Support claim(s) with logical reasoning and relevant evidence, demonstrating an understanding of the topic or text. c. Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), reasons, and evidence. d. Establish and maintain a formal style. e. Provide a concluding statement or section that follows from and supports the argument presented.	**1.** Write arguments to support claims with clear reasons and relevant evidence. a. Introduce claim(s), acknowledge and distinguish the claim(s) from alternate or opposing claims, and organize the reasons and evidence logically. b. Support claim(s) with logical reasoning and relevant evidence, using credible sources and demonstrating an understanding of the topic or text. c. Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), counterclaims, reasons, and evidence. d. Establish and maintain a formal style. e. Provide a concluding statement or section that follows from and supports the argument presented.
2. Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content. a. Introduce a topic; organize ideas, concepts, and information, using strategies such as definition, classification, comparison/contrast, and cause/effect; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension. b. Develop the topic with relevant facts, definitions, concrete details, quotations, or other information and examples. c. Use appropriate transitions to clarify the relationships among ideas and concepts. d. Use precise language and domain-specific vocabulary to inform about or explain the topic. e. Establish and maintain a formal style. f. Provide a concluding statement or section that follows from the information or explanation presented.	**2.** Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content. a. Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information, using strategies such as definition, classification, comparison/contrast, and cause/effect; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension. b. Develop the topic with relevant facts, definitions, concrete details, quotations, or other information and examples. c. Use appropriate transitions to create cohesion and clarify the relationships among ideas and concepts. d. Use precise language and domain-specific vocabulary to inform about or explain the topic. e. Establish and maintain a formal style. f. Provide a concluding statement or section that follows from and supports the information or explanation presented.	**2.** Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content. a. Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information into broader categories; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension. b. Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples. c. Use appropriate and varied transitions to create cohesion and clarify the relationships among ideas and concepts. d. Use precise language and domain-specific vocabulary to inform about or explain the topic. e. Establish and maintain a formal style. f. Provide a concluding statement or section that follows from and supports the information or explanation presented.

Grade 6 students:	Grade 7 students:	Grade 8 students:
Text Types and Purposes (continued)		
3. Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences. a. Engage and orient the reader by establishing a context and introducing a narrator and/or characters; organize an event sequence that unfolds naturally and logically. b. Use narrative techniques, such as dialogue, pacing, and description, to develop experiences, events, and/or characters. c. Use a variety of transition words, phrases, and clauses to convey sequence and signal shifts from one time frame or setting to another. d. Use precise words and phrases, relevant descriptive details, and sensory language to convey experiences and events. e. Provide a conclusion that follows from the narrated experiences or events.	**3.** Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences. a. Engage and orient the reader by establishing a context and point of view and introducing a narrator and/or characters; organize an event sequence that unfolds naturally and logically. b. Use narrative techniques, such as dialogue, pacing, and description, to develop experiences, events, and/or characters. c. Use a variety of transition words, phrases, and clauses to convey sequence and signal shifts from one time frame or setting to another. d. Use precise words and phrases, relevant descriptive details, and sensory language to capture the action and convey experiences and events. e. Provide a conclusion that follows from and reflects on the narrated experiences or events.	**3.** Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences. a. Engage and orient the reader by establishing a context and point of view and introducing a narrator and/or characters; organize an event sequence that unfolds naturally and logically. b. Use narrative techniques, such as dialogue, pacing, description, and reflection, to develop experiences, events, and/or characters. c. Use a variety of transition words, phrases, and clauses to convey sequence, signal shifts from one time frame or setting to another, and show the relationships among experiences and events. d. Use precise words and phrases, relevant descriptive details, and sensory language to capture the action and convey experiences and events. e. Provide a conclusion that follows from and reflects on the narrated experiences or events.
Production and Distribution of Writing		
4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)	**4.** Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)	**4.** Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)
5. With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.	**5.** With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed.	**5.** With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed.
6. Use technology, including the Internet, to produce and publish a minimum of three pages of writing as well as to interact and collaborate with others.	**6.** Use technology, including the Internet, to produce and publish a minimum of four pages of writing as well as to interact and collaborate with others.	**6.** Use technology, including the Internet, to produce and publish a minimum of five pages of writing as well as to interact and collaborate with others.

Grade 6 students:	Grade 7 students:	Grade 8 students:
Research to Build and Present Knowledge		
7. Conduct short research projects to answer a question, drawing on several sources and refocusing the inquiry when appropriate.	**7.** Conduct short research projects to answer a question, drawing on several sources and generating additional related, focused questions for further research and investigation.	**7.** Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.
8. Gather relevant information from multiple print and digital sources; assess the credibility of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and providing basic bibliographic information for sources.	**8.** Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.	**8.** Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.
9. Draw evidence from literary or informational texts to support analysis, reflection, and research. a. Apply *grade 6 Reading standards* to literature (e.g., "Compare and contrast texts in different forms or genres (e.g., stories and poems; historical novels and fantasy stories) in terms of their approaches to similar themes and topics."). b. Apply *grade 6 Reading standards* to literary nonfiction (e.g., "Delineate and evaluate the argument and specific claims in a text, distinguishing claims that are supported by reasons and evidence from claims that are not").	**9.** Draw evidence from literary or informational texts to support analysis, reflection, and research. a. Apply *grade 7 Reading standards* to literature (e.g., "Compare and contrast a fictional portrayal of a time, place, or character and a historical account of the same period as a means of understanding how authors of fiction use or alter history]). b. Apply *grade 7 Reading standards* to literary nonfiction (e.g., "Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is sufficient to support the claims").	**9.** Draw evidence from literary or informational texts to support analysis, reflection, and research. a. Apply *grade 8 Reading standards* to literature (e.g., "Analyze how a modern work of fiction draws on themes, patterns of events, or character types from myths, traditional stories, or religious works such as the Bible, including describing how the material is rendered new"). b. Apply *grade 8 Reading standards* to literary nonfiction (e.g., "Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient and identifying when irrelevant evidence is introduced").
Range of Writing		
10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	**10.** Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	**10.** Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

Grades 9–10 students:	Grades 11–12 students:
Text Types and Purposes	
1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. a. Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among claim(s), counterclaims, reasons, and evidence. b. Develop claim(s) and counterclaims fairly, supplying evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the audience's knowledge level and concerns. c. Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims. d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. e. Provide a concluding statement or section that follows from and supports the argument presented.	**1.** Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. a. Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences claim(s), counterclaims, reasons, and evidence. b. Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the audience's knowledge level, concerns, values, and possible biases. c. Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims. d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. e. Provide a concluding statement or section that follows from and supports the argument presented.
2. Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content. a. Introduce a topic; organize complex ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension. b. Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. c. Use appropriate and varied transitions to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts. d. Use precise language and domain-specific vocabulary to manage the complexity of the topic. e. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. f. Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).	**2.** Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content. a. Introduce a topic; organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension. b. Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. c. Use appropriate and varied transitions and syntax to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts. d. Use precise language, domain-specific vocabulary, and techniques such as metaphor, simile, and analogy to manage the complexity of the topic. e. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. f. Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).

Grades 9–10 students:	Grades 11–12 students:
Text Types and Purposes (continued)	
3. Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences. a. Engage and orient the reader by setting out a problem, situation, or observation, establishing one or multiple point(s) of view, and introducing a narrator and/or characters; create a smooth progression of experiences or events. b. Use narrative techniques, such as dialogue, pacing, description, reflection, and multiple plot lines, to develop experiences, events, and/or characters. c. Use a variety of techniques to sequence events so that they build on one another to create a coherent whole. d. Use precise words and phrases, telling details, and sensory language to convey a vivid picture of the experiences, events, setting, and/or characters. e. Provide a conclusion that follows from and reflects on what is experienced, observed, or resolved over the course of the narrative.	**3.** Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences. a. Engage and orient the reader by setting out a problem, situation, or observation and its significance, establishing one or multiple point(s) of view, and introducing a narrator and/or characters; create a smooth progression of experiences or events. b. Use narrative techniques, such as dialogue, pacing, description, reflection, and multiple plot lines, to develop experiences, events, and/or characters. c. Use a variety of techniques to sequence events so that they build on one another to create a coherent whole and build toward a particular tone and outcome (e.g., a sense of mystery, suspense, growth, or resolution). d. Use precise words and phrases, telling details, and sensory language to convey a vivid picture of the experiences, events, setting, and/or characters. e. Provide a conclusion that follows from and reflects on what is experienced, observed, or resolved over the course of the narrative.
Production and Distribution of Writing	
4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)	**4.** Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)
5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.	**5.** Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.
6. Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.	**6.** Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.
Research to Build and Present Knowledge	
7. Conduct short as well as more sustained research projects to answer a question (including a self-generate question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.	**7.** Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
8. Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.	**8.** Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.

Grades 9–10 students:	Grades 11–12 students:
Research to Build and Present Knowledge (continued)	
9. Draw evidence from literary or informational texts to support analysis, reflection, and research. a. Apply *grades 9–10 Reading standards* to literature (e.g., "Demonstrate knowledge of eighteenth-, nineteenth- and early-twentieth-century foundational works of American literature, drawing on how two or more texts from the same period treat similar themes or topics"). b. Apply *grades 9–10 Reading standards* to literary nonfiction (e.g., "Delineate and evaluate the argument and claims in a text, assessing the relevance and sufficiency of the evidence and the validity of the reasoning and identifying false statements and fallacious reasoning").	**9.** Draw evidence form literary or informational texts to support analysis, reflection, and research. a. Apply *grades 11–12 Reading standards* to literature (e.g., "Analyze how an author draws on and transforms source material in a specific work (e.g., how Shakespeare draws on Ovid or the Bible or how a later author draws on a play by Shakespeare) in order to evaluate how the texts treat similar themes or topics"). b. Apply *grades 11–12 Reading standards* to literary nonfiction (e.g., "Delineate and evaluate the argument and claims in a text, assessing the relevance and sufficiency of the evidence and the validity of the reasoning, identifying and evaluating stated and unstated premises and assumptions").
Range of Writing	
10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.	**10.** Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

College and Career Readiness Anchor Standards for Speaking and Listening

The grades 6–12 standards on the following pages define what students should understand and be able to do by the end of each grade. They relate to their College and Career Readiness (CCR) counterparts by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

Comprehension and Collaboration

1. Prepare for and participate effectively in a range of conversations and collaborations, building on others' ideas and expressing their own clearly and persuasively.
2. Integrate and evaluate content from multiple graphical, visual, oral, or multimodal sources.
3. Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric.

Presentation of Knowledge and Ideas

4. Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.
5. Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.
6. Adapt speech to a variety of contexts and communicative tasks, demonstrating command of formal English when indicated or appropriate.

Note on range and content of student speaking and listening

To become college and career ready, students must have ample opportunities to take part in a variety of rich, structured conversations—as part of a whole class, in small groups, and with a partner—built around important content in various domains. They must be able to contribute appropriately to these conversations, to make comparisons and contrasts, and to analyze and synthesize a multitude of ideas in accordance with the standards of evidence appropriate to a particular discipline. Whatever their intended major or profession, high school graduates will depend heavily on their ability to listen attentively to others so that they are able to build on others' meritorious ideas while expressing their own clearly and persuasively.

New technologies have broadened and expanded the role that speaking and listening play in acquiring and sharing knowledge and have tightened their link to other forms of communication. The Internet has accelerated the speed at which connections between speaking, listening, reading, and writing can be made, requiring that students be ready to use these modalities nearly simultaneously. Technology itself is changing quickly, creating a new urgency for students to be adaptable in response to change.

Speaking and Listening Standards 6–12

The following standards for grades 6–12 offer a focus for instruction in each year to help ensure that students gain adequate mastery of a range of skills and applications. Students advancing through the grades are expected to meet each year's grade-specific standards and retain or further develop skills and understandings mastered in preceding grades.

Grade 6 students:	Grade 7 students:	Grade 8 students:
Comprehension and Collaboration		
1. Engage effectively in a range of collaborative discussions (one-on-one and in groups) on *grade 6 topics, texts, and issues*, building on others' ideas and expressing their own clearly. a. Come to discussions prepared, having read or studied required material; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion. b. With guidance and support from adults, work with peers to set rules for collegial discussions, clear goals and deadlines, and individual roles as needed. c. Pose and respond to specific questions with elaboration and detail by making comments that contribute to the topic, text, or issue under discussion. d. Review the key ideas expressed and demonstrate understanding of multiple perspectives through reflection and paraphrasing.	**1.** Engage effectively in a range of collaborative discussions (one-on-one and in groups) on *grade 7 topics, texts, and issues*, building on others' ideas and expressing their own clearly. a. Come to discussions prepared, having read or researched material under study; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion. b. Work with peers to set rules for collegial discussions, clear goals and deadlines, and individual roles as needed. c. Pose questions that elicit elaboration and respond to others' questions and comments with relevant observations and ideas that bring the discussion back on topic as needed. d. Acknowledge new information expressed by others and, when warranted, modify their own views and understanding.	**1.** Engage effectively in a range of collaborative discussions (one-on-one and in groups) on *grade 8 topics, texts, and issues*, building on others' ideas and expressing their own clearly. a. Come to discussions prepared, having read or researched material under study; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion. b. Work with peers to set rules for collegial discussions, clear goals and deadlines, and individual roles as needed. c. Pose questions that connect the ideas of several speakers and elicit elaboration, and respond to others' questions and comments with relevant evidence, observations, and ideas. d. Acknowledge new information expressed by others, and, when warranted, qualify or justify their own views and understanding in light of the evidence presented.
2. Interpret information presented in graphical, oral, visual or multimodal formats and explain how it contributes to a topic, text, or issue under study.	**2.** Analyze the main ideas and supporting details presented in graphical, oral, visual, or multimodal formats and explain how the ideas clarify a topic, text, or issue under study.	**2.** Determine the purpose of information in graphical, oral, visual, or multimodal formats and evaluate the motives (e.g., social, commercial, political) behind its presentation.
3. Delineate a speaker's argument and specific claims, distinguishing claims that are supported by reasons and evidence from claims that are not.	**3.** Delineate a speaker's argument and specific claims, evaluating the soundness of the reasoning and the relevance of the evidence.	**3.** Delineate a speaker's argument and specific claims, evaluating the validity of the reasoning and sufficiency of the evidence.
Presentation of Knowledge and Ideas		
4. Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation.	**4.** Present claims and findings, emphasizing salient points in a focused, coherent manner with pertinent descriptions, facts, details, and examples; use appropriate eye contact, adequate volume, and clear pronunciation.	**4.** Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation.
5. Include multimedia components (e.g., graphics, images, music, sound) and visual displays in presentations to clarify information.	**5.** Include multimedia components and visual displays in presentations to clarify claims and findings and emphasize salient points.	**5.** Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest.
6. Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. (See standards 1–3 in Language, pages 53–57, for specific expectations.)	**6.** Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. (See standards 1–3 in Language, pages 53–57, for specific expectations.)	**6.** Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. (See standards 1–3 in Language, pages 53–57, for specific expectations.)

Grades 9–10 students:	Grades 11–12 students:
Comprehension and Collaboration	
1. Initiate and participate effectively in a range of collaborative discussions (one-on-one and in groups) on *grades 9–10 topics, texts, and issues*, building on others' ideas and expressing their own clearly and persuasively. a. Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas. b. Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues, presentation of alternate views), clear goals and deadlines, and individual roles as needed. c. Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions. d. Respond thoughtfully to diverse perspectives, summarize points of agreement and disagreement, and, when warranted, qualify or justify their own views and understanding and make new connections in light of the evidence and reasoning presented.	**1.** Initiate and participate effectively in a range of collaborative discussions (one-on-one and in groups) on *grades 11–12 topics, texts, and issues*, building on others' ideas and expressing their own clearly and persuasively. a. Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas. b. Work with peers to promote civil, democratic discussions and decision-making, set clear goals and deadlines, and establish individual roles as needed. c. Propel conversations by posing and responding to questions that probe reasoning and evidence; ensure a hearing for a full range of positions on a topic or issue; clarify, verify, or challenge ideas and conclusions; and promote divergent and creative perspectives. d. Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task.
2. Synthesize information from multiple graphical, visual, or multimodal sources with other information presented orally, noting any discrepancies among the data.	**2.** Integrate information from multiple graphical, oral, visual, or multimodal sources in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and resolving conflicting information when possible.
3. Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, identifying any fallacious reasoning or exaggerated or distorted evidence.	**3.** Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, assessing the stance, premises, links among ideas, word choice, points of emphasis, and tone used.
Presentation of Knowledge and Ideas	
4. Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task.	**4.** Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range or formal and informal tasks.
5. Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.	**5.** Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.
6. Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. (See standards 1–3 in Language, pages 53–57, for specific expectations.)	**6.** Adapt speech to a variety of contexts and tasks, demonstrating a command of formal English when indicated or appropriate. (See standards 1–3 in Language, pages 53–57, for specific expectations.)

College and Career Readiness Anchor Standards for Language

The grades 6–12 standards on the following pages define what students should understand and be able to do by the end of each grade. They relate to their College and Career Readiness (CCR) counterparts by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

Conventions

1. Demonstrate command of the conventions of standard English grammar and usage.
2. Demonstrate command of the conventions of capitalization, punctuation, and spelling.

Effective Language Use

3. Use language to enhance meaning, convey style, and achieve particular effects when writing and speaking.

Vocabulary Acquisition and Use

4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases by using context clues, analyzing meaningful word parts, and consulting general and specialized reference materials, as appropriate.
5. Demonstrate understanding of word relationships and nuances in word meanings.
6. Acquire and use accurately a range of general academic and domain-specific vocabulary sufficient for reading, writing, speaking, and listening at the college and career readiness level.

Note on range and content of student language use

To be college and career ready in language, students must have firm control over the conventions of grammar, usage, and mechanics. At the same time, they must come to appreciate that language is as at least as much a matter of craft as of rules and be able to use words, syntax, and punctuation to achieve particular rhetorical effects. They must also have extensive vocabularies, built through reading and study, enabling them to comprehend complex texts and engage in purposeful writing about and conversations around content. They need to become skilled in determining or clarifying the meaning of words and phrases they encounter, choosing flexibly from an array of strategies to aid them. They must learn to see an individual word as part of a network of other words—words, for example, that have similar denotations but different connotations. The inclusion of Language standards in their own strand should not be taken as an indication that skills related to conventions, effective language use, and vocabulary are unimportant to reading, writing, speaking, and listening; indeed, they are inseparable from such contexts.

The following standards for grades 6–12 offer a focus for instruction each year to help ensure that students gain adequate mastery of a range of skills and applications. Students advancing through the grades are expected to meet each year's grade-specific standards and retain or further develop skills and understandings mastered in preceding grades. Beginning in grade 3, skills and understandings that are particularly likely to require continued attention in higher grades as they are applied to increasingly sophisticated writing and speaking are marked with an asterisk (*). See the table on page 57 for a complete listing and Appendix A for an example of how these skills develop in sophistication.

Grade 6 students:	Grade 7 students:	Grade 8 students:
Conventions		
1. Observe conventions of grammar and usage when writing or speaking. a. Ensure that pronouns are in the proper case (subjective, objective, possessive). b. Use intensive pronouns (e.g., *myself, ourselves*). c. Recognize and correct inappropriate shifts in pronoun number and person.* d. Recognize and correct vague pronouns (i.e., ones with unclear or ambiguous antecedents).* e. Recognize variations from standard English in their own and others' writing and speaking, and identify and use strategies to improve expression in conventional language.*	**1.** Observe conventions of grammar and usage when writing or speaking. a. Explain the function of phrases and clauses in general and their function in specific sentences. b. Choose among simple, compound, complex, and compound-complex sentences to signal differing relationships among ideas. c. Place phrases and clauses within a sentence, recognizing and correcting misplaced and dangling modifiers.*	**1.** Observe conventions of grammar and usage when writing or speaking. a. Explain the function of verbals (gerunds, participles, infinitives) in general and their function in particular sentences. b. Form and use verbs in the active and passive voice. c. Form and use verbs in the indicative, imperative, interrogative, conditional, and subjunctive mood. d. Recognize and correct inappropriate shifts in verb voice and mood.*
2. Observe conventions of capitalization, punctuation, and spelling when writing. a. Use punctuation (commas, parentheses, dashes) to set off nonrestrictive/parenthetical elements.* b. Spell correctly.	**2.** Observe conventions of capitalization, punctuation, and spelling when writing. a. Use a comma to separate coordinate adjectives (e.g., *It was a fascinating, enjoyable movie* but not *He wore an old[,] green shirt*). b. Spell correctly.	**2.** Observe conventions of capitalization, punctuation, and spelling when writing. a. Use punctuation (comma, ellipsis, dash) to indicate a pause or break. b. Use an ellipsis to indicate an omission. c. Spell correctly.
Effective Language Use		
3. Use language to enhance meaning, convey style, and achieve particular effects when writing or speaking. a. Vary sentence patterns for meaning, reader/listener interest, and style.* b. Maintain consistency in style and tone.*	**3.** Use language to enhance meaning, convey style, and achieve particular effects when writing or speaking. a. Choose language that expresses ideas precisely and concisely, recognizing and eliminating wordiness and redundancy.*	**3.** Use language to enhance meaning, convey style, and achieve particular effects when writing or speaking. a. Use verbs in the active and passive voice and in the conditional and subjunctive mood to achieve particular effects (e.g., emphasizing the actor or the action; expressing uncertainty or describing a state contrary to fact).

Grade 6 students:	Grade 7 students:	Grade 8 students:
Vocabulary Acquisition and Use		
4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on ***grade 6 reading and content***, choosing flexibly from a range of strategies. a. Use context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase. b. Use common, grade-appropriate Greek or Latin affixes and roots as clues to the meaning of a word (e.g., *audience*, *auditory*, *audible*). c. Consult reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning or its part of speech. d. Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).	**4.** Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on ***grade 7 reading and content***, choosing flexibly from a range of strategies. a. Use context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase. b. Use common, grade-appropriate Greek or Latin affixes and roots as clues to the meaning of a word (e.g., *belligerent*, *bellicose*, *rebel*). c. Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning or its part of speech. d. Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).	**4.** Determine or clarify the meaning of unknown and multiple-meaning words or phrases based on ***grade 8 reading and content***, choosing flexibly from a range of strategies. a. Use context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase. b. Use common, grade-appropriate Greek or Latin affixes and roots as clues to the meaning of a word (e.g., *precede*, *recede*, *secede*). c. Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning or its part of speech. d. Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).
5. Demonstrate understanding of figurative language, word relationships, and nuances in word meanings. a. Interpret figures of speech (e.g., personification) in context. b. Use the relationship between particular words (e.g., cause/effect, part/whole, item/category) to better understand each of the words. c. Distinguish among the connotations (associations) of words with similar denotations (definitions) (e.g., *stingy*, *scrimping*, *economical*, *unwasteful*, *thrifty*).	**5.** Demonstrate understanding of figurative language, word relationships, and nuances in word meanings. a. Interpret figures of speech (e.g., literary, biblical, and mythological allusions) in context. b. Use the relationship between particular words (e.g., synonym/antonym, analogy) to better understand each of the words. c. Distinguish among the connotations (associations) of words with similar denotations (definitions) (e.g., *refined*, *respectful*, *polite*, *diplomatic*, *condescending*).	**5.** Demonstrate understanding of figurative language, word relationships, and nuances in word meanings. a. Interpret figures of speech (e.g. verbal irony, puns) in context. b. Use the relationship between particular words to better understand each of the words. c. Distinguish among the connotations (associations) of words with similar denotations (definitions) (e.g., *bullheaded*, *willful*, *firm*, *persistent*, *resolute*).
6. Acquire and use accurately grade-appropriate general academic and domain-specific vocabulary.	**6.** Acquire and use accurately grade-appropriate general academic and domain-specific vocabulary.	**6.** Acquire and use accurately grade-appropriate general academic and domain-specific vocabulary.

Grades 9–10 students:	Grades 11–12 students:
Conventions	
1. Observe conventions of grammar and usage when writing or speaking. a. Use parallel structure.* b. Use various types of phrases (noun, verb, adjectival, adverbial, participial, prepositional, absolute) and clauses (independent, dependent; noun, relative, adverbial) to add variety and interest to writing or presentations.	**1.** Observe conventions of grammar and usage when writing or speaking. a. Apply the understanding that usage is a matter of convention, can change over time, and is sometimes contested. b. Resolve issues of complex or contested usage, consulting references (e.g., *Merriam-Webster's Dictionary of English Usage*, *Garner's Modern American English*) as needed.
2. Observe conventions of capitalization, punctuation, and spelling when writing. a. Use a semicolon (and perhaps a conjunctive adverb) to link two or more closely related independent clauses. b. Use a colon to introduce a list or quotation. c. Spell correctly.	**2.** Observe conventions of capitalization, punctuation, and spelling when writing. a. Observe hyphenation conventions. b. Spell correctly.
Effective Language Use	
3. Use language to enhance meaning, convey style, and achieve particular effects when writing or speaking. a. Write and edit work so that it conforms to the guidelines in a style manual (e.g., *MLA Handbook*, Turabian's *Manual for Writers*) appropriate for the discipline and writing type.	**3.** Use language to enhance meaning, convey style, and achieve particular effects when writing or speaking. a. Vary syntax for effect, consulting references (e.g., Tufte's *Artful Sentences*) for guidance as needed; apply an understanding of syntax to the study of complex texts when reading.
Vocabulary Acquisition and Use	
4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on *grades 9–10 reading and content*, choosing flexibly from a range of strategies. a. Use context (e.g., the overall meaning of a sentence, paragraph, or text; a word's position or function in a sentence) as a clue to the meaning of a word or phrase. b. Identify and correctly use patterns of word changes that indicate different meanings or parts of speech (e.g., *analyze*, *analysis*, *analytical*; *advocate*, *advocacy*). c. Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning, its part of speech, or its etymology. d. Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).	**4.** Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on *grades 11–12 reading and content*, choosing flexibly from a range of strategies. a. Use context (e.g., the overall meaning of a sentence, paragraph, or text; a word's position or function in a sentence) as a clue to the meaning of a word or phrase. b. Identify and correctly use patterns of word changes that indicate different meanings or parts of speech (e.g., *conceive, conception, conceivable*). c. Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning, its part of speech, its etymology, or its standard usage. d. Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).
5. Demonstrate understanding of figurative language, word relationships, and nuances in word meanings. a. Interpret figures of speech (e.g., satire, sarcasm) in context and analyze their role in the text. b. Analyze nuances in the meaning of words with similar denotations.	**5.** Demonstrate understanding of figurative language, word relationships, and nuances in word meanings. a. Interpret figures of speech (e.g., hyperbole, paradox) in context and analyze their role in the text. b. Analyze nuances in the meaning of words with similar denotations.
6. Acquire and use accurately general academic and domain-specific vocabulary sufficient for reading, writing, speaking, and listening at the college and career readiness level.	**6.** Acquire and use accurately general academic and domain-specific vocabulary sufficient for reading, writing, speaking, and listening at the college and career readiness level.

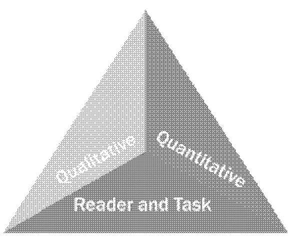
Language Progressive Skills, by Grade

The following skills, marked with an asterisk (*) in Language standards 1–3, are particularly likely to require continued attention in higher grades as they are applied to increasingly sophisticated writing and speaking.

Skill	3	4	5	6	7	8	9–10	11–12
Ensure subject-verb and pronoun-antecedent agreement.								
Choose words and phrases for effect.								
Produce complete sentences, recognizing and correcting rhetorically poor fragments and run-ons.								
Correctly use frequently confused words (e.g., *to/too/two*; *there/their*).								
Choose words and phrases to convey ideas precisely.								
Use punctuation for effect.								
Recognize and correct inappropriate shifts in verb tense and aspect.								
Use punctuation to separate items in a series.								
Recognize and correct inappropriate shifts in pronoun number and person.								
Recognize and correct vague pronouns (i.e., ones with unclear or ambiguous antecedents).								
Recognize variations from standard English in their own and others' writing and speaking, and identify and use strategies to improve expression in conventional language.								
Use punctuation (commas, parentheses, dashes) to set off nonrestrictive/parenthetical elements.								
Vary sentence patterns for meaning, reader/listener interest, and style.								
Maintain consistency in style and tone.								
Place phrases and clauses within a sentence, recognizing and correcting misplaced and dangling modifiers.								
Choose language that expresses ideas precisely and concisely, eliminating wordiness and redundancy.								
Recognize and correct inappropriate shifts in verb voice and mood.								
Use parallel structure.								

Standard 10: Range, Quality, and Complexity of Student Reading 6–12

Measuring Text Complexity: Three Factors



Qualitative evaluation of the text: Levels of meaning, structure, language conventionality and clarity, and knowledge demands

Quantitative evaluation of the text: Readability measures and other scores of text complexity

Matching reader to text and task: Reader knowledge, motivation, and interests as well as the complexity generated by the tasks assigned and the questions posed

Note: More detailed information on text complexity and how it is measured is contained in Appendix A.

Range of Text Types for 6–12

Students in grades 6–12 apply the Reading standards to the following range of text types, with texts selected from a broad range of cultures and periods.

Literature			Informational Text
Stories	**Drama**	**Poetry**	**Literary Nonfiction**
Includes the subgenres of adventure stories, historical fiction, mysteries, myths, science fiction, realistic fiction, allegories, parodies, satire, and graphic novels	Includes one-act and multiact plays, both in written form and on film	Includes the subgenres of narrative poems, lyrical poems, free verse poems, sonnets, odes, ballads, and epics	Includes the subgenres of exposition, argument, and functional text in the form of personal essays, speeches, opinion pieces, essays about art or literature, biographies, memoirs, journalism, and historical, scientific, or economic accounts (including digital sources) written for a broad audience

Texts Illustrating the Complexity, Quality, and Range of Student Reading 6–12

	Literature: Stories, Dramas, Poetry	Informational Texts: Literary Nonfiction
6–8	▪ *Little Women* by Louisa May Alcott (1869) ▪ *The Adventures of Tom Sawyer* by Mark Twain (1876) ▪ "The Road Not Taken" by Robert Frost (1915) ▪ *The Dark Is Rising* by Susan Cooper (1973) ▪ *Dragonwings* by Laurence Yep (1975) ▪ *Roll of Thunder, Hear My Cry* by Mildred Taylor (1976)	▪ "Letter on Thomas Jefferson" by John Adams (1776) ▪ *Narrative of the Life of Frederick Douglass, an American Slave* by Frederick Douglass (1845) ▪ *Harriet Tubman: Conductor on the Underground Railroad* by Ann Petry (1955) ▪ *Travels with Charley: In Search of America* by John Steinbeck (1962) ▪ *The Great Fire* by Jim Murphy (1995) ▪ *This Land Was Made for You and Me: The Life and Songs of Woody Guthrie* by Elizabeth Partridge (2002)
9–10	▪ *The Tragedy of Romeo and Juliet* by William Shakespeare (1592) ▪ "Ozymandias" by Percy Bysshe Shelley (1817) ▪ "The Raven" by Edgar Allen Poe (1845) ▪ "The Gift of the Magi" by O. Henry (1906) ▪ *The Grapes of Wrath* by John Steinbeck (1939) ▪ *Fahrenheit 451* by Ray Bradbury (1953) ▪ *The Killer Angels* by Michael Shaara (1975)	▪ "Speech to the Second Virginia Convention" by Patrick Henry (1775) ▪ The Declaration of Independence by Thomas Jefferson (1776) ▪ "Second Inaugural Address" by Abraham Lincoln (1865) ▪ "State of the Union Address" by Franklin Delano Roosevelt (1941) ▪ *Cod: A Biography of the Fish That Changed the World* by Mark Kurlansky (1997) ▪ *The Race to Save Lord God Bird* by Phillip Hoose (2004)
11–CCR	▪ "Ode on a Grecian Urn" by John Keats (1820) ▪ *Jane Eyre* by Charlotte Brontë (1848) ▪ "Because I Could Not Stop for Death" by Emily Dickinson (1890) ▪ *The Great Gatsby* by F. Scott Fitzgerald (1925) ▪ *Their Eyes Were Watching God* by Zora Neale Hurston (1937) ▪ *A Raisin in the Sun* by Lorraine Hansberry (1959) ▪ *The Namesake* by Jhumpa Lahiri (2003)	▪ *The Crisis* by Thomas Paine (1776) ▪ *Walden* by Henry David Thoreau (1854) ▪ "Society and Solitude" by Ralph Waldo Emerson (1857) ▪ "Gettysburg Address" by Abraham Lincoln (1863) ▪ "Letter from Birmingham Jail" by Martin Luther King, Jr. (1964) ▪ *Google Hacks: Tips & Tools for Smarter Searching* by Tara Calishain and Rael Dornfest (2004) ▪ *America's Constitution: A Biography* by Akhil Reed Amar (2005)

Note: Given space limitations, the illustrative texts listed above are meant only to show individual titles that are representative of a range of topics and genres. (See Appendix B for excerpts of these and other texts illustrative of grades 6–12 text complexity, quality, and range.) At a curricular or instructional level, within and across grade levels, texts need to be selected around topics or themes that generate knowledge and allow students to study those topics or themes in depth.

Standards for Literacy in History/Social Studies, Science, and Technical Subjects

6–12

College and Career Readiness Anchor Standards for Reading

The grades 6–12 standards on the following pages define what students should understand and be able to do by the end of each grade. They relate to their College and Career Readiness (CCR) counterparts by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

Key Ideas and Details

1. Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.
2. Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.
3. Analyze how and why individuals, events, or ideas develop and interact over the course of a text.

Craft and Structure

4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.
5. Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole.
6. Assess how point of view or purpose shapes the content and style of a text.

Integration of Knowledge and Ideas

7. Integrate and evaluate content presented graphically, visually, orally, and multimodally as well as in words within and across print and digital sources.*
8. Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.
9. Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.

Range Reading and Level of Text Complexity

10. Read and comprehend complex literary and informational texts independently and proficiently.

*Please see "Research to Build and Present Knowledge" in Writing for additional standards relevant to gathering, assessing, and applying information from print and digital sources.

Note on range and content of student reading

Reading is critical to building knowledge in history/social studies as well as in science and technical subjects. College- and career-ready reading in these fields requires an appreciation of the norms and conventions of each discipline, such as the kinds of evidence used in history and science; an understanding of domain-specific words and phrases; an attention to precise details; and the capacity to evaluate intricate arguments, synthesize complex information, and follow detailed descriptions of events and concepts. In history/social studies, for example, students need to be able to analyze, evaluate, and differentiate primary and secondary sources. When reading scientific and technical texts, students need to be able to gain knowledge from challenging texts that often make extensive use of elaborate diagrams and data to convey information and illustrate concepts. Students must be able to read complex informational texts in these fields with *independence and confidence because the vast majority of reading in college and workforce training programs will be sophisticated nonfiction. It is important to note that these Reading standards are meant to complement the specific content demands of the disciplines, not replace them.*

Reading Standards for Literacy in History/Social Studies 6–12 [RH]

The standards below begin at grade 6; standards for K–5 reading in history/social studies, science, and technical subjects are integrated into the K–5 Reading standards.

Grades 6–8 students:	Grades 9–10 students:	Grades 11–12 students:
Key Ideas and Details		
1. Cite specific textual evidence to support analysis of primary and secondary sources. **2.** Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions. **3.** Identify key steps in a text's description of a process related to history/social studies (e.g., how a bill becomes law, how interest rates are raised or lowered).	**1.** Cite specific textual evidence to support analysis of primary and secondary sources, attending to such features as the date and origin of the information. **2.** Determine the central ideas or information of a primary or secondary source; provide an accurate summary of how key events or ideas develop over the course of the text. **3.** Analyze in detail a series of events described in a text; determine whether earlier events caused later ones or simply preceded them.	**1.** Cite specific textual evidence to support analysis of primary and secondary sources, connecting insights gained from specific details to an understanding of the text as a whole. **2.** Determine the central ideas or information of a primary or secondary source; provide an accurate summary that makes clear the relationships among the key details and ideas. **3.** Evaluate various explanations for actions or events and determine which explanation best accords with textual evidence, acknowledging where the text leaves matters uncertain.
Craft and Structure		
4. Determine the meaning of words and phrases as they are used in a text, including vocabulary specific to domains related to history/social studies. **5.** Describe how a text presents information (e.g., sequentially, comparatively, causally). **6.** Identify aspects of a text that reveal an author's point of view or purpose (e.g., loaded language, inclusion or avoidance of particular facts).	**4.** Determine the meaning of words and phrases as they are used in a text, including vocabulary describing political, social, or economic aspects of history/social science. **5.** Analyze how a text uses structure to emphasize key points or advance a point of view. **6.** Compare the point of view of two or more authors by comparing how they treat the same or similar history/social science topics, including which details they include and emphasize in their respective accounts.	**4.** Determine the meaning of words and phrases as they are used in a text, including analyzing how an author uses and refines the meaning of a key term over the course of a text (e.g., how Madison defines *faction* in *Federalist* No. 10). **5.** Analyze in detail how a complex primary source is structured, including how key sentences, paragraphs, and larger portions of the text contribute to the whole. **6.** Evaluate authors' differing points of view on the same historical event or issue by assessing the authors' claims, reasoning, and evidence.
Integration of Knowledge and Ideas		
7. Integrate visual information (e.g., pictures, videos, maps) with other information within or across print or digital texts. **8.** Distinguish among fact, opinion, and reasoned judgment in a text. **9.** Analyze the relationship between a primary and secondary source on the same topic.	**7.** Integrate quantitative or technical information (e.g., charts, research data) with other information within or across print or digital texts. **8.** Assess the extent to which the evidence in a text supports the author's claims. **9.** Compare and contrast treatments of the same topic in several primary and secondary sources.	**7.** Integrate and evaluate multiple sources of information presented in different formats (e.g., print or digital text, video, multimedia) in order to address a question, resolving conflicting information when possible. **8.** Evaluate an author's premises, claims, and evidence by corroborating or challenging them with other sources of information. **9.** Integrate information from diverse sources, both primary and secondary, into a coherent understanding of an idea or event, noting discrepancies among sources.
Range of Reading and Level of Text Complexity		
10. By the end of grade 8, read and comprehend history/social studies texts in the grades 6–8 text complexity band independently and proficiently.	**10.** By the end of grade 10, read and comprehend history/social studies texts in the grades 9–10 text complexity band independently and proficiently.	**10.** By the end of grade 12, read and comprehend history/social studies texts in the grades 11–12 text complexity band independently and proficiently.

Grades 6–8 students:	Grades 9–10 students:	Grades 11–12 students:
Key Ideas and Details		
1. Cite specific textual evidence to support analysis of science and technical texts. **2.** Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions. **3.** Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.	**1.** Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions. **2.** Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text. **3.** Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks attending to special cases or exceptions defined in the text.	**1.** Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account. **2.** Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms. **3.** Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
Craft and Structure		
4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 6–8 texts and topics*. **5.** Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic. **6.** Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.	**4.** Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 9–10 texts and topics*. **5.** Analyze the structure of the relationships among concepts in a text, including relationships among key terms pertaining to important ideas and processes (e.g., *force, friction, reaction force, energy*). **6.** Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, defining the question the author seeks to address.	**4.** Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 11–12 texts and topics*. **5.** Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas. **6.** Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved or uncertain.
Integration of Knowledge and Ideas		
7. Integrate quantitative or technical information provided by the words in a text with a version of that information expressed graphically (e.g., in a flowchart, diagram, model, graph, or table). **8.** Distinguish among facts, reasoned judgment based on research findings, and speculation in a text. **9.** Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.	**7.** Demonstrate understanding of quantitative or technical information by translating information provided by the words in a text into graphical form (e.g., a table or chart) or translating information expressed graphically or mathematically (e.g., in an equation) into words. **8.** Assess the extent to which the evidence in a text supports a claim or a recommendation for solving a scientific or technical problem. **9.** Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts.	**7.** Integrate and evaluate multiple sources of information presented in different formats (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem, resolving conflicting information when possible. **8.** Evaluate the hypotheses, data, and conclusions in a science or technical text, verifying data and corroborating or challenging conclusions when possible by using other sources of information. **9.** Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.
Range and Level of Text Complexity		
10. By the end of grade 8, read and comprehend	**10.** By the end of grade 10, read and comprehend	**10.** By the end of grade 12, read and comprehend

science/technical texts in the grades 6–8 text complexity band independently and proficiently.	science/technical texts in the grades 9–10 text complexity band independently and proficiently.	science/technical texts in the grades 11–12 text complexity band independently and proficiently.

College and Career Readiness Anchor Standards for Writing

The grades 6–12 standards on the following pages define what students should understand and be able to do by the end of each grade. They relate to their College and Career Readiness (CCR) counterparts by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

Text Types and Purposes[1]

1. Write arguments to support claims in an analysis of substantive topics or texts using valid reasoning and relevant and sufficient evidence.
2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.
3. Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details and well-structured event sequences.

Production and Distribution of Writing

4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.[2]
6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

Research to Build and Present Knowledge

7. Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.
8. Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.
9. Draw evidence from literary or informational texts to support analysis, reflection, and research.

Range of Writing

10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

Note on range and content of student writing

For students, writing is a key means of asserting and defending claims, showing what they know about a subject, and conveying what they have experienced, imagined, thought, and felt. To be college- and career-ready writers, students must take task, purpose, and audience into careful consideration, choosing words, information, structures, and formats deliberately. They need to be able to use technology strategically when creating, refining, and collaborating on writing. They have to become adept at gathering information, evaluating sources, and citing material accurately, reporting findings from their research and analysis of sources in a clear and cogent manner. They must have the flexibility, concentration, and fluency to produce high-quality first-draft text under a tight deadline and the capacity to revisit and make improvements to a piece of writing over multiple drafts when circumstances encourage or require it. To meet these goals, students must devote significant time and effort to writing, producing numerous pieces over short and long time frames throughout the year.

[1]These broad types of writing include many subgenres. See Appendix A for definitions of key writing types.

The standards below begin at grade 6; standards for K–5 writing in history/social studies, science, and technical subjects are integrated into the K–5 Writing standards.

Grades 6–8 students:	Grades 9–10 students:	Grades 11–12 students:
Text Types and Purposes		
2. Write arguments focused on *discipline-specific content*. a. Introduce claim(s) about a topic or issue, acknowledge and distinguish the claim(s) from alternate or opposing claims, and organize the reasons and evidence logically. b. Support claim(s) with logical reasoning and relevant, accurate data and evidence that demonstrate an understanding of the topic or text, using credible sources. f. Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), counterclaims, reasons, and evidence. g. Establish and maintain a formal style. c. Provide a concluding statement or section that follows from and supports the argument presented.	**1.** Write arguments focused on *discipline-specific content*. f. Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among the claim(s), counterclaims, reasons, and evidence. g. Develop claim(s) and counterclaims fairly, supplying data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form and in a manner that anticipates the audience's knowledge level and concerns. h. Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims. i. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. j. Provide a concluding statement or section that follows from or supports the argument presented.	**1.** Write arguments focused on *discipline-specific content*. f. Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences the claim(s), counterclaims, reasons, and evidence. g. Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form that anticipates the audience's knowledge level, concerns, values, and possible biases. h. Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims. i. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. j. Provide a concluding statement or section that follows from or supports the argument presented.

Grades 6–8 students:	Grades 9–10 students:	Grades 11–12 students:
Text Types and Purposes (continued)		
4. Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. g. Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information into broader categories as appropriate to achieving purpose; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension. h. Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples. i. Use appropriate and varied transitions to create cohesion and clarify the relationships among ideas and concepts. j. Use precise language and domain-specific vocabulary to inform about or explain the topic. k. Establish and maintain a formal style and objective tone. l. Provide a concluding statement or section that follows from and supports the information or explanation presented.	**3.** Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. g. Introduce a topic and organize ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension. h. Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. i. Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among ideas and concepts. j. Use precise language and domain-specific vocabulary to manage the complexity of the topic and convey a style appropriate to the discipline and context as well as to the expertise of likely readers. k. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. l. Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).	**3.** Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. a. Introduce a topic and organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension. b. Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. c. Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts. d. Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers. e. Provide a concluding statement or section that follows from and supports the information or explanation provided (e.g., articulating implications or the significance of the topic).
3. Students' narrative skills continue to grow in these grades. The Standards require that students be able to incorporate narrative elements effectively into arguments and informative/explanatory texts. In history, students must be able to incorporate narrative accounts into their analyses of individuals or events of historical import. In science, students must be able to write precise enough descriptions of the step-by-step procedures they use in their investigations that others can replicate them and (possibly) reach the same results.	**3.** Students' narrative skills continue to grow in these grades. The Standards require that students be able to incorporate narrative elements effectively into arguments and informative/explanatory texts. In history, students must be able to incorporate narrative accounts into their analyses of individuals or events of historical import. In science, students must be able to write precise enough descriptions of the step-by-step procedures they use in their investigations that others can replicate them and (possibly) reach the same results.	**3.** Students' narrative skills continue to grow in these grades. The Standards require that students be able to incorporate narrative elements effectively into arguments and informative/explanatory texts. In history, students must be able to incorporate narrative accounts into their analyses of individuals or events of historical import. In science, students must be able to write precise enough descriptions of the step-by-step procedures they use in their investigations that others can replicate them and (possibly) reach the same results.

Grades 6–8 students:	Grades 9–10 students:	Grades 11–12 students:
Production and Distribution of Writing		
4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. **5.** With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed. **6.** Use technology, including the Internet, to produce and publish a minimum of five pages of writing as well as to interact and collaborate with others.	**4.** Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. **5.** Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. 6. Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.	**4.** Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. **5.** Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. **6.** Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.
Research to Build and Present Knowledge		
7. Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration. **8.** Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation. **10.** Draw evidence from informational texts to support analysis reflection, and research.	**7.** Conduct short as well as more sustained research projects to answer a question (including a self-generate question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation. **8.** Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation. **9.** Draw evidence from informational texts to support analysis, reflection, and research.	**7.** Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation. **8.** Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation. **9.** Draw evidence from informational texts to support analysis, reflection, and research.
Range of Writing		
10. Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	**10.** Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	**10.** Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

Contents

Introduction
Toward greater focus and coherence

Mathematics experiences in early childhood settings should concentrate on (1) number (which includes whole number, operations, and relations) and (2) geometry, spatial relations, and measurement, with more mathematics learning time devoted to number than to other topics. [M]athematical process goals should be integrated in these content areas.

National Research Council, 2009

The composite standards [of Hong Kong, Korea and Singapore] have a number of features that can inform an international benchmarking process for the development of K–6 mathematics standards in the U.S. First, the composite standards concentrate the early learning of mathematics on the number, measurement, and geometry strands with less emphasis on data analysis and little exposure to algebra. The Hong Kong standards for grades 1–3 devote approximately half the targeted time to numbers and almost all the time remaining to geometry and measurement.

Ginsburg, Leinwand and Decker, 2009

Because the mathematics concepts in [U.S.] textbooks are often weak, the presentation becomes more mechanical than is ideal. We looked at both traditional and non-traditional textbooks used in the US and found this conceptual weakness in both.

Ginsburg et al., 2005

There are many ways to organize curricula. The challenge, now rarely met, is to avoid those that distort mathematics and turn off students.

Steen, 2007

For over a decade, research studies of mathematics education in high-performing countries have pointed to the conclusion that the mathematics curriculum in the United States must become substantially more focused and coherent in order to improve mathematics achievement in this country. To deliver on the promise of common standards, the standards must address the problem of a curriculum that is 'a mile wide and an inch deep.' These Standards are a substantial answer to that challenge.

It is important to recognize that "fewer standards" are no substitute for *focused* standards. Achieving "fewer standards" would be easy to do by resorting to broad, general statements. Instead, these Standards aim for clarity and specificity.

Assessing the coherence of a set of standards is more difficult than assessing their focus. William Schmidt and Richard Houang (2002) have said that content standards and curricula are coherent if they are:

> *articulated over time as a sequence of topics and performances that are logical and reflect, where appropriate, the sequential or hierarchical nature of the disciplinary content from which the subject matter derives. That is, what and how students are taught should reflect not only the topics that fall within a certain academic discipline,* ***but also the key ideas*** *that determine how knowledge is organized and generated within that discipline. This implies that "to be coherent," a set of content standards must evolve from particulars (e.g., the meaning and operations of whole numbers, including simple math facts and routine computational procedures associated with whole numbers and fractions) to deeper structures inherent in the discipline. This deeper structure then serves as a means for connecting the particulars (such as an understanding of the rational number system and its properties).* (emphasis added)

These Standards endeavor to follow such a design, not only by stressing conceptual understanding of key ideas, but also by continually returning to organizing principles such as place value or the laws of arithmetic to structure those ideas.

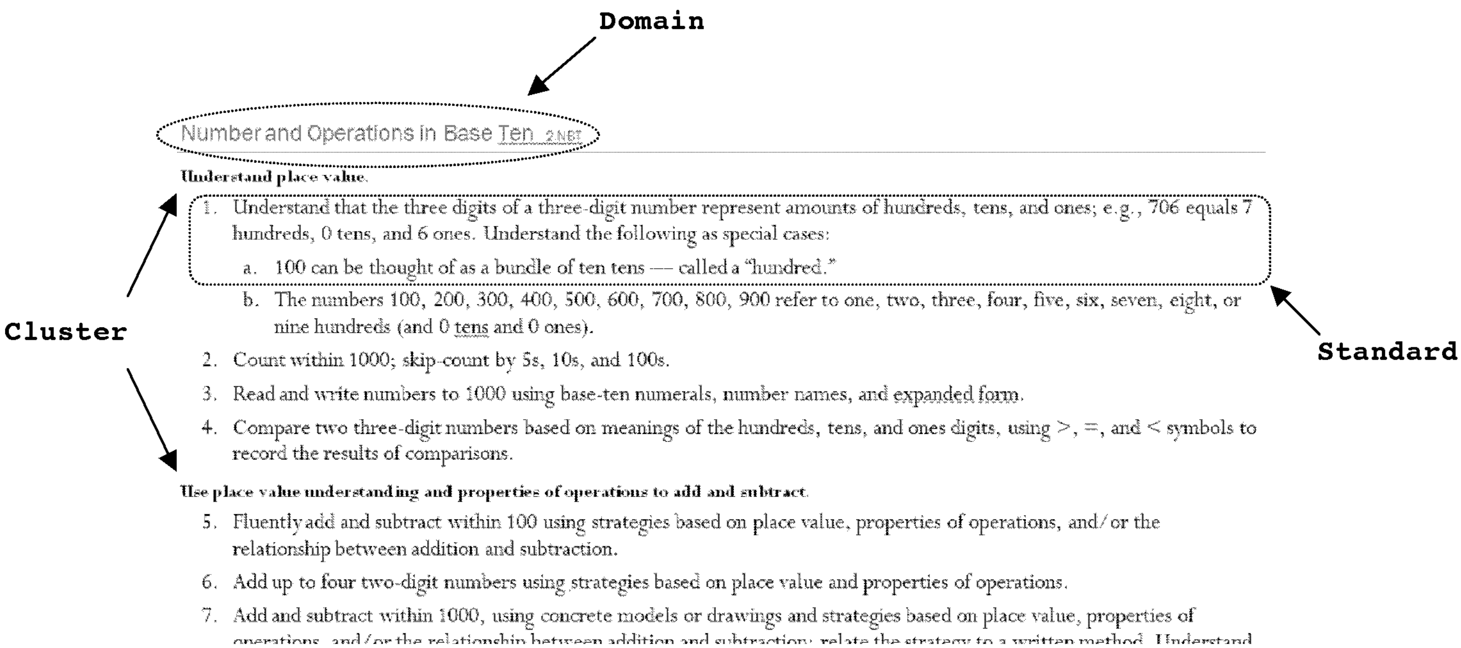
In addition, the 'sequence of topics and performances' that is outlined in a body of mathematics standards must also respect what is known about how students learn. As Confrey (2007) points out, developing "sequenced obstacles and challenges for students…absent the insights about meaning that derive from careful study of learning, would be unfortunate and unwise." In recognition of this, the development of these Standards began with research-based learning progressions detailing what is known today about how students' mathematical knowledge, skill, and understanding develop over time.

Understanding mathematics

These Standards define what students should understand and be able to do in their study of mathematics. Asking a student to understand something means asking a teacher to assess whether the student has understood it. But what does mathematical understanding look like? One hallmark of mathematical understanding is the ability to justify, in a way appropriate to the student's mathematical maturity, *why* a particular mathematical statement is true or where a mathematical rule comes from. There is a world of difference between a student who can summon a mnemonic device to expand a product such as $(a + b)(x + y)$ and a student who can explain where the mnemonic comes from. The student who can explain the rule understands the mathematics, and may have a better chance to succeed at a less familiar task such as expanding $(a + b + c)(x + y)$. Mathematical understanding and procedural skill are equally important, and both are assessable using mathematical tasks of sufficient richness.

The Standards begin on the next page with eight Standards for Mathematical Practice.

How to read the grade level standards



Standards define what students should understand and be able to do. **Clusters** summarize groups of related standards. Note that standards from different clusters may sometimes be closely related, because mathematics is a connected subject. **Domains** are larger groups of related standards. Standards from different domains may sometimes be closely related.

Dotted Underlines: Dotted underlines, for example, associative property, indicate terms that are defined in the Glossary. In each grade, underlining is used for the first occurrence of a defined term, but not in subsequent occurrences.

Mathematics | Standards for Mathematical Practice

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students. These practices rest on important "processes and proficiencies" with longstanding importance in mathematics education: the NCTM process standards of problem solving, reasoning and proof, communication, representation, and connections; and the strands of mathematical proficiency specified in the National Research Council's report *Adding It Up*: adaptive reasoning, strategic competence, conceptual understanding (comprehension of mathematical concepts, operations and relations), procedural fluency (skill in carrying out procedures flexibly, accurately, efficiently and appropriately), and productive disposition (habitual inclination to see mathematics as sensible, useful, and worthwhile, coupled with a belief in diligence and one's own efficacy).

1 Make sense of 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 analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. They consider analogous problems, and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Older students might, depending on the context of the problem, transform algebraic expressions or change the viewing window on their graphing calculator to get the information they need. Mathematically proficient students can explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, "Does this make sense?" They can understand the approaches of others to solving complex problems and identify correspondences between different approaches. Key related processes: Problem solving. Key related proficiencies: Conceptual understanding, strategic competence, productive disposition.

2 Reason abstractly and quantitatively.

Mathematically proficient students make sense of the quantities and their relationships in problem situations. Students bring two complementary abilities to bear on problems involving quantitative relationships: the ability to *decontextualize*—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to *contextualize*, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects. Key related processes: Problem solving, Representation. Key related Key related proficiencies: Strategic competence, productive disposition.

3 Construct viable arguments and critique the reasoning of others.

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 are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. They 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. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. Elementary students can construct arguments using concrete referents such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until later grades. Later, students learn to determine domains to which an argument applies. Students at all grades can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments. Key related processes: Problem solving, Representation. Key related proficiencies: Strategic competence, productive disposition.

4 Model with mathematics.

Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. By high school, a student might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose. Key related processes: Representation. Key related proficiencies: Adaptive reasoning.

5 Use appropriate tools strategically.

Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, ruler, protractor, calculator, spreadsheet, computer algebra system, statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts. Key related processes: Problem solving. Key related proficiencies: Strategic competence.

6 Attend to precision.

Mathematically proficient students try to communicate precisely to others. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. They are careful about specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, express numerical answers with a degree of precision appropriate for the problem context. In the elementary grades, students give carefully formulated explanations to each other. By the time they reach high school they have learned to examine claims and make explicit use of definitions. Key related processes: Problem solving, Representation. Key related proficiencies: Procedural fluency.

7 Look for and make use of structure.

Mathematically proficient students look closely to discern a pattern or structure. Young students, for example, might notice that three and seven more is the same amount as seven and three more, or they may sort a collection of shapes according to how many sides the shapes have. Later, students will see 7×8 equals the well remembered $7 \times 5 + 7 \times 3$, in preparation for learning about the distributive property. In the expression $x^2 + 9x + 14$, older students can see the 14 as 2×7 and the 9 as $2 + 7$. They recognize the significance of an existing line in a geometric figure and can use the strategy of drawing an auxiliary line for solving problems. They also can step back for an overview and shift perspective. They can see complicated things, such as some algebraic expressions, as single objects or as composed of several objects. For example, they can see $5 - 3(x - y)^2$ as 5 minus a positive number times a square and use that to realize that its value cannot be more than 5 for any real numbers x and y. Key related processes: Reasoning and proof. Key related proficiencies: Adaptive reasoning.

8 Look for and express regularity in repeated reasoning.

Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again, and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are on the line through (1, 2) with slope 3, middle school students might abstract the equation $(y - 2)/(x -$

1) = 3. Noticing the regularity in the way terms cancel when expanding $(x - 1)(x + 1)$, $(x - 1)(x^2 + x + 1)$, and $(x - 1)(x^3 + x^2 + x + 1)$ might lead them to the general formula for the sum of a geometric series. As they work to solve a problem, mathematically proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results. Key related processes: Problem solving, Reasoning and proof. Key related proficiencies: Adaptive reasoning.

Connecting the Standards for Mathematical Practice to the Standards for Mathematical Content

The Standards for Mathematical Practice describe ways in which developing student-practitioners of the discipline of mathematics increasingly ought to engage with the subject matter as they grow in mathematical maturity and expertise throughout the elementary, middle and high school years. Designers of curriculum, assessment, and professional development should all attend to the need to connect the mathematical practices to mathematical content in mathematics instruction.

The Standards for Mathematical Content are a balanced combination of procedure and understanding. Expectations that begin with the word "understand" are often especially good opportunities to connect the practices to the content. Students who lack understanding of a topic may rely on procedures too heavily. Without a flexible base from which to work, they may be less likely to consider analogous problems, represent problems coherently, justify conclusions, apply the mathematics to practical situations, use technology mindfully to work with the mathematics, explain the mathematics accurately to other students, step back for an overview, or deviate from a known procedure to find a shortcut. In short, a lack of understanding effectively prevents a student from engaging in the mathematical practices.

In this respect, those content standards which set an expectation of understanding are potential "points of intersection" between the Standards for Mathematical Content and the Standards for Mathematical Practice. These points of intersection are intended to be weighted toward central and generative concepts in the school mathematics curriculum that most merit the time, resources, innovative energies, and focus necessary to qualitatively improve curriculum, instruction, assessment, professional development, and student achievement in mathematics.

Mathematics | Kindergarten

In Kindergarten, instructional time should focus on two critical areas: (1) representing and comparing whole numbers, initially with sets of objects; (2) describing shapes and space. More learning time in Kindergarten should be devoted to number than to other topics.

(1) Students use numbers, including written numerals, to represent quantities and to solve quantitative problems, such as counting objects in a set; counting out a given number of objects; comparing sets or numerals; and modeling simple joining and separating situations with sets of objects, or eventually with equations such as $5 + 2 = 7$ and $7 – 2 = 5$. (Kindergarten students should see addition and subtraction equations, and student writing of equations in kindergarten is encouraged, but it is not required.) Students choose, combine, and apply effective strategies for answering quantitative questions, including quickly recognizing the cardinalities of small sets of objects, counting and producing sets of given sizes, counting the number of objects in combined sets, or counting the number of objects that remain in a set after some are taken away.

(2) Students describe their physical world using geometric ideas (e.g., shape, orientation, spatial relations) and vocabulary. They identify, name, and describe basic two-dimensional shapes, such as squares, triangles, circles, rectangles, and hexagons, presented in a variety of ways (e.g., with different sizes and orientations), as well as three-dimensional shapes such as cubes, cones, cylinders, and spheres. They use basic shapes and spatial reasoning to model objects in their environment and to construct more complex shapes.

Grade Level Overview

Counting and Cardinality

- Know number names and the count sequence.
- Count to tell the number of objects.
- Compare numbers.

Operations and Algebraic Thinking

- Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.

Number and Operations in Base Ten

- Work with numbers 11-19 to gain foundations for place value.

Measurement and Data

- Describe and compare measurable attributes.
- Classify objects and count the number of objects in each category

Geometry

1. Identify and describe shapes.
2. Analyze, compare, create, and compose shapes.

Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Counting and Cardinality K.CC

Know number names and the count sequence.

1. Count to 100 by ones and by tens.
2. Count forward beginning from a given number within the known sequence (instead of having to begin at 1).
3. Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).

Count to tell the number of objects.

4. Understand the relationship between numbers and quantities; connect counting to cardinality.
   a. When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object.
   b. Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.
   c. Understand that each successive number name refers to a quantity that is one larger.
5. Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle; or as many as 10 things in a scattered configuration; given a number from 1-20, count out that many objects.

Compare numbers.

6. Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies.[1]
7. Compare two numbers between 1 and 10 presented as written numerals.

Operations and Algebraic Thinking K.OA

Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.

1. Represent addition and subtraction with objects, fingers, mental images, drawings,[2] sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.
2. Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.
3. Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each decomposition by a drawing or equation (e.g., $5 = 2 + 3$ and $5 = 4 + 1$).
4. For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation.
5. Fluently add and subtract within 5.

Number and Operations in Base Ten K.NBT

Work with numbers 11-19 to gain foundations for place value.

1. Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (such as $18 = 10 + 8$); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.

Measurement and Data K.MD

Describe and compare measurable attributes.

1. Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.
2. Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. *For example, directly compare the heights of two children and describe one child as taller/shorter.*

Classify objects and count the number of objects in each category.

3. Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.[3]

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[1] Include groups with up to ten objects.
[2] Drawings need not show details, but should show the mathematics in the problem. (This applies wherever drawings are mentioned in the Standards.)

Identify and describe shapes (such as squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).

1. Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as *above*, *below*, *beside*, *in front of*, *behind*, and *next to*.
2. Correctly name shapes regardless of their orientations or overall size.
3. Identify shapes as two-dimensional (lying in a plane, “flat”) or three-dimensional (“solid”).

Analyze, compare, create, and compose shapes.

4. Analyze and compare a variety of two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/“corners”) and other attributes (e.g., having sides of equal length).
5. Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.
6. Compose simple shapes to form larger shapes.

[3] Limit category counts to be less than or equal to 10.

Mathematics | Grade 1

In Grade 1, instructional time should focus on four critical areas: (1) developing understanding of addition, subtraction, and strategies for addition and subtraction within 20; (2) developing understanding of whole number relationships and place value, including grouping in tens and ones; (3) developing understanding of linear measurement and measuring lengths as iterating length units; and (4) reasoning about attributes of, and composing and decomposing geometric shapes.

(1) Students develop strategies for adding and subtracting whole numbers based on their prior work with small numbers. They use a variety of models, including discrete objects and length-based models (e.g., cubes connected to form lengths), to model add-to, take-from, put-together, take-apart, and compare situations to develop meaning for the operations of addition and subtraction, and to develop strategies to solve arithmetic problems with these operations. Students understand connections between counting and addition and subtraction (e.g., adding two is the same as counting on two). They use properties of addition to add whole numbers and to create and use increasingly sophisticated strategies based on these properties (e.g., "making tens") to solve addition and subtraction problems within 20. By comparing a variety of solution strategies, children build their understanding of the relationship between addition and subtraction.

(2) Students develop, discuss, and use efficient, accurate, and generalizable methods to add within 100 and subtract multiples of 10. They compare whole numbers (at least to 100) to develop understanding of and solve problems involving their relative sizes. They think of whole numbers between 10 and 100 in terms of tens and ones (especially recognizing the numbers 11 to 19 as composed of a ten and some ones). Through activities that build number sense, they understand the order of the counting numbers and their relative magnitudes.

(3) Students develop an understanding of the meaning and processes of measurement, including underlying concepts such as iterating (the mental activity of building up the length of an object with equal-sized units) and the transitivity principle for indirect measurement.[4]

(4) Students compose and decompose plane or solid figures (e.g., put two triangles together to make a quadrilateral) and build understanding of part-whole relationships as well as the properties of the original and composite shapes. As they combine shapes, they recognize them from different perspectives and orientations, describe their geometric attributes, and determine how they are alike and different, to develop the background for measurement and for initial understandings of properties such as congruence and symmetry.

Grade Level Overview

Operations and Algebraic Thinking

- Represent and solve problems involving addition and subtraction.
- Understand and apply properties of operations and the relationship between addition and subtraction.
- Add and subtract within 20.
- Work with addition and subtraction equations.

Number and Operations in Base Ten

- Extend the counting sequence.
- Understand place value.
- Use place value understanding and properties of operations to add and subtract.

Measurement and Data

- Measure lengths indirectly and by iterating length units.
- Tell and write time.
- Represent and interpret data.

Geometry

- Reason with shapes and their attributes.

Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

[4] Students should apply the principle of transitivity of measurement to make indirect comparisons, but they need not use this technical term.

Operations and Algebraic Thinking 1.OA

Represent and solve problems involving addition and subtraction.

1. Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.[5]
2. Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, *e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.*

Understand and apply properties of operations and the relationship between addition and subtraction.

3. Apply properties of operations as strategies to add and subtract.[6] *Examples: If $8 + 3 = 11$ is known, then $3 + 8 = 11$ is also known. (Commutative property of addition.) To add $2 + 6 + 4$, the second two numbers can be added to make a ten, so $2 + 6 + 4 = 2 + 10 = 12$. (Associative property of addition.)*
4. Understand subtraction as an unknown-addend problem. *For example, subtract $10 - 8$ by finding the number that makes 10 when added to 8.*

Add and subtract within 20.

5. Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).
6. Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., $8 + 6 = 8 + 2 + 4 = 10 + 4 = 14$); decomposing a number leading to a ten (e.g., $13 - 4 = 13 - 3 - 1 = 10 - 1 = 9$); using the relationship between addition and subtraction (e.g., knowing that $8 + 4 = 12$, one knows $12 - 8 = 4$); and creating equivalent but easier or known sums (e.g., adding $6 + 7$ by creating the known equivalent $6 + 6 + 1 = 12 + 1 = 13$).

Work with addition and subtraction equations.

7. Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. *For example, which of the following equations are true and which are false? $6 = 6$, $7 = 8 - 1$, $5 + 2 = 2 + 5$, $4 + 1 = 5 + 2$.*
8. Determine the unknown number in a whole-number addition or subtraction equation. *For example, determine the unknown number that makes the equation true in each of the equations $8 + ? = 11$, $5 = \square - 3$, $6 + 6 = \square$.*

Number and Operations in Base Ten 1.NBT

Extend the counting sequence.

1. Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.

Understand place value.

2. Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases:
   a. 10 can be thought of as a bundle of ten ones — called a "ten."
   b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.
   c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).
3. Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols $>$, $=$, and $<$.

Use place value understanding and properties of operations to add and subtract.

4. Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.
5. Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.
6. Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

[5] See Glossary, Table 1.
[6] Students need not use formal terms for these properties.

Measurement and Data 1.MD

Measure lengths indirectly and by iterating length units.

1. Order three objects by length; compare the lengths of two objects indirectly by using a third object.
2. Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. *Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.*

Tell and write time.

3. Tell and write time in hours and half-hours using analog and digital clocks.

Represent and interpret data.

4. Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.

Geometry 1.G

Reason with shapes and their attributes.

1. Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size) for a wide variety of shapes; build and draw shapes to possess defining attributes.
2. Compose two-dimensional shapes (such as rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (such as cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape.[7]
3. Partition circles and rectangles into two and four equal shares, describe the shares using the words *halves*, *fourths*, and *quarters*, and use the phrases *half of*, *fourth of*, and *quarter of*. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.

[7] Students do not need to learn formal names such as "right rectangular prism."

Mathematics | Grade 2

In Grade 2, instructional time should focus on four critical areas: (1) extending understanding of base-ten notation; (2) building fluency with addition and subtraction; (3) using standard units of measure; and (4) describing and analyzing shapes.

(1) Students extend their understanding of the base-ten system. This includes ideas of counting in fives, tens, and multiples of hundreds, tens, and ones, as well as number relationships involving these units, including comparing. Students understand multi-digit numbers (up to 1000) written in base-ten notation, recognizing that the digits in each place represent amounts of thousands, hundreds, tens, or ones (e.g., 853 is 8 hundreds + 5 tens + 3 ones).

(2) Students use their understanding of addition to develop fluency with addition and subtraction within 100. They solve problems by applying their understanding of models for addition and subtraction, and they develop, discuss, and use efficient, accurate, and generalizable methods to compute sums and differences of whole numbers in base-ten notation, using their understanding of place value and the properties of operations. They select and accurately apply methods that are appropriate for the context and the numbers involved to mentally calculate sums and differences for numbers with only tens or only hundreds.

(3) Students recognize the need for standard units of measure (centimeter and inch) and they use rulers and other measurement tools with the understanding that linear measure involves an iteration of units. They recognize that the smaller the unit, the more iterations they need to cover a given length.

(4) Students describe and analyze shapes by examining their sides and angles. Students investigate, describe, and reason about decomposing and combining shapes to make other shapes. Through building, drawing, and analyzing two- and three-dimensional shapes, students develop a foundation for understanding area, volume, congruence, similarity, and symmetry in later grades.

Grade Level Overview

Operations and Algebraic Thinking

- Represent and solve problems involving addition and subtraction.
- Add and subtract within 20.
- Work with equal groups of objects to gain foundations for multiplication.

Number and Operations in Base Ten

- Understand place value.
- Use place value understanding and properties of operations to add and subtract.

Measurement and Data

- Measure and estimate lengths in standard units.
- Relate addition and subtraction to length.
- Work with time and money.
- Represent and interpret data.

Geometry

- Reason with shapes and their attributes.

Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Operations and Algebraic Thinking 2.OA

Represent and solve problems involving addition and subtraction.

1. Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.[8]

Add and subtract within 20.

2. Fluently add and subtract within 20. By end of Grade 2, know from memory all sums of two one-digit numbers.

Work with equal groups of objects to gain foundations for multiplication.

3. Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.
4. Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.

Number and Operations in Base Ten 2.NBT

Understand place value.

1. Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases:
   a. 100 can be thought of as a bundle of ten tens — called a "hundred."
   b. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).
2. Count within 1000; skip-count by 5s, 10s, and 100s.
3. Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.
4. Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.

Use place value understanding and properties of operations to add and subtract.

5. Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
6. Add up to four two-digit numbers using strategies based on place value and properties of operations.
7. Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.
8. Mentally add 10 or 100 to a given number 100-900, and mentally subtract 10 or 100 from a given number 100-900.
9. Explain why addition and subtraction strategies work, using place value and the properties of operations.[9]

Measurement and Data 2.MD

Measure and estimate lengths in standard units.

1. Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.
2. Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.
3. Estimate lengths using units of inches, feet, centimeters, and meters.
4. Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.

Relate addition and subtraction to length.

[8] See Glossary, Table 1.
[9] Explanations may be supported by drawings or objects.

5. Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.
6. Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences on a number line diagram.

Work with time and money.

7. Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.
8. Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. *Example: If you have 2 dimes and 3 pennies, how many cents do you have?*

Represent and interpret data.

9. Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.
10. Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems[10] using information presented in a bar graph.

Geometry 2.G

Reason with shapes and their attributes.

1. Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces.[11] Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.
2. Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.
3. Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words *halves*, *thirds*, *half of*, *a third of*, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.

[10] See Glossary, Table 1.
[11] Sizes are compared directly or visually, not compared by measuring.

Mathematics | Grade 3

In Grade 3, instructional time should focus on four critical areas: (1) developing understanding of multiplication and division and strategies for multiplication and division within 100; (2) developing understanding of fractions, especially unit fractions (fractions with numerator 1); (3) developing understanding of the structure of rectangular arrays and of area; and (4) describing and analyzing two-dimensional shapes.

(1) Students develop an understanding of the meanings of multiplication and division of whole numbers through activities and problems involving equal-sized groups, arrays, and area models; multiplication is finding an unknown product, and division is finding an unknown factor in these situations. For equal-sized group situations, division can require finding the unknown number of groups or the unknown group size. Students use properties of operations to calculate products of whole numbers, using increasingly sophisticated strategies based on these properties to solve multiplication and division problems involving single-digit factors. By comparing a variety of solution strategies, students learn the relationship between multiplication and division.

(2) Students develop an understanding of fractions, beginning with unit fractions. Students view fractions in general as being built out of unit fractions, and they use fractions along with visual fraction models to represent parts of a whole. Students understand that the size of a fractional part is relative to the size of the whole; for example, $1/2$ of the paint in a large bucket could be less paint than $1/3$ of the paint in a smaller bucket; but $1/3$ of a ribbon is longer than $1/5$ of the same ribbon because when the ribbon is divided into 3 equal parts, the parts are longer than when the ribbon is divided into 5 equal parts. Students are able to use fractions to represent numbers equal to, less than, and greater than one. They solve problems that involve comparing fractions by using visual fraction models and strategies based on noticing equal numerators or denominators.

(3) Students recognize area as an attribute of two-dimensional regions. They measure the area of a shape by finding the total number of same-size units of area required to cover the shape without gaps or overlaps, a square with sides of unit length being the standard unit for measuring area. Students understand that rectangular arrays can be decomposed into identical rows or into identical columns. By decomposing rectangles into rectangular arrays of squares, students connect area to multiplication, and justify using multiplication to determine the area of a rectangle.

(4) Students describe, analyze, and compare properties of two-dimensional shapes. They compare and classify shapes by their sides and angles, and connect these with definitions of shapes. Students also relate their fraction work to geometry by expressing the area of part of a shape as a unit fraction of the whole.

Grade Level Overview

Operations and Algebraic Thinking

- Represent and solve problems involving multiplication and division.
- Understand properties of multiplication and the relationship between multiplication and division.
- Multiply and divide within 100.
- Solve problems involving the four operations, and identify and explain patterns in arithmetic.

Number and Operations in Base Ten

- Use place value understanding and properties of operations to perform multi-digit arithmetic.

Number and Operations—Fractions

- Develop understanding of fractions as numbers.

Measurement and Data

- Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.
- Represent and interpret data.
- Geometric measurement: understand concepts of area and relate area to multiplication and to addition.
- Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.

Geometry

- Reason with shapes and their attributes.

Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Operations and Algebraic Thinking 3.OA

Represent and solve problems involving multiplication and division.

1. Interpret products of whole numbers, e.g., interpret 5 × 7 as the total number of objects in 5 groups of 7 objects each. *For example, , describe a context in which a total number of objects can be expressed as 5 × 7.*
2. Interpret whole-number quotients of whole numbers, e.g., interpret 56 ÷ 8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. *For example, describe a context in which a number of shares or a number of groups can be expressed as* 56 ÷ 8.
3. Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.[12]
4. Determine the unknown whole number in a multiplication or division equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations 8 × ? = 48, 5 = □ ÷ 3, 6 × 6 = ?.*

Understand properties of multiplication and the relationship between multiplication and division.

5. Apply properties of operations as strategies to multiply and divide.[13] *Examples: If 6 × 4 = 24 is known, then 4 × 6 = 24 is also known. (Commutative property of multiplication.) 3 × 5 × 2 can be found by multiplying 3 × 5 = 15 then multiplying 15 × 2 = 30, or by multiplying 5 × 2 = 10 then multiplying 3 × 10 = 30. (Associative property of multiplication.) Knowing that 8 × 5 = 40 and 8 × 2 = 16, one can find 8 × 7 as 8 × (5 + 2) = (8 × 5) + (8 × 2) = 40 + 16 = 56. (Distributive property.)*
6. Understand division as an unknown-factor problem. *For example, divide 32 ÷ 8 by finding the number that makes 32 when multiplied by 8.*

Multiply and divide within 100.

7. Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By end of Grade 3, know from memory all products of one-digit numbers.

Solve problems involving the four operations, and identify and explain patterns in arithmetic.

8. Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity; assess the reasonableness of answers using mental computation and estimation strategies including rounding.[14]
9. Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. *For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.*

Number and Operations in Base Ten 3.NBT

Use place value understanding and properties of operations to perform multi-digit arithmetic.[15]

1. Use place value understanding to round whole numbers to the nearest 10 or 100.
2. Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.
3. Multiply one-digit whole numbers by multiples of 10 in the range 10-90 (e.g., 9 × 80, 5 × 60) using strategies based on place value and properties of operations.

Number and Operations—Fractions[16] 3-NF

Develop understanding of fractions as numbers.

1. Understand a fraction $^1/_b$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction $^a/_b$ as the quantity formed by a parts of size $^1/_b$.
2. Understand a fraction as a number on the number line; represent fractions on a number line diagram.

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[12] See Glossary, Table 2.
[13] Students need not use formal terms for these properties.
[14] This standard is limited to problems posed with whole numbers and having whole-number answers; students should know how to perform operations in the conventional order when there are no parentheses to specify a particular order.
[15] A range of algorithms may be used.
[16] Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, 8.

a. Represent a fraction $1/b$ on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size $1/b$ and that the endpoint of the part based at 0 locates the number $1/b$ on the number line.

b. Represent a fraction a/b on a number line diagram by marking off a lengths $1/b$ from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line.

3. Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.

a. Recognize and generate simple equivalent fractions (e.g., $1/2 = 2/4$, $4/6 = 2/3$); explain why the fractions are equivalent, e.g., by using a visual fraction model.

b. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. *Examples: Express 3 in the form $3 = 3/1$; recognize that $6/1 = 6$; locate $4/4$ and 1 at the same point of a number line diagram.*

c. Compare two fractions with the same numerator or the same denominator, by reasoning about their size; recognize that valid comparisons rely on the two fractions referring to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.

Measurement and Data 3.MD

Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.

1. Tell and write time to the nearest minute and measure time intervals in minutes; solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.
2. Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l).[17] Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.[18]

Represent and interpret data.

3. Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs. *For example, draw a bar graph in which each square in the bar graph might represent 1 pet, 5 pets, or 10 pets.*
4. Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters.

Geometric measurement: understand concepts of area and relate area to multiplication and to addition.

5. Recognize area as an attribute of plane figures and understand concepts of area measurement.

a. A square with side length 1 unit, called "a unit square," is said to have "one square unit" of area, and can be used to measure area.

b. A plane figure which can be covered without gaps or overlaps by n unit squares is said to have an area of n square units.

6. Measure areas by counting unit squares, using square cm, square m, square in, square ft, and improvised units.
7. Relate area to the operations of multiplication and addition.

a. Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.

b. Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real-world and mathematical problems; represent whole-number products as rectangular areas in mathematical reasoning.

c. Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths a and $b + c$ is the sum of $a \times b$ and $a \times c$; use area models to represent the distributive property in mathematical reasoning.

d. Recognize area as additive; find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real-world problems.

Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.

8. Solve real-world and mathematical problems involving perimeters of polygons, such as finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different area or with the same area and different perimeter.

Geometry 3.G

[17] Excludes compound units such as cm^3 and finding the geometric volume of a container.

[18] Excludes multiplicative comparison problems (problems involving notions of "times as much"; see Glossary, Table 2).

Reason with shapes and their attributes.

1. Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals); recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.
2. Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. *For example, partition a shape into 4 parts with equal area, and describe the area of each part is $^1/_4$ of the area of the shape.*

Mathematics | Grade 4

In Grade 4, instructional time should focus on four critical areas: (1) developing understanding and fluency with whole number multiplication, and developing understanding of whole number division; (2) developing an understanding of fraction equivalence, addition and subtraction of fractions with like denominators, and multiplication of fractions by whole numbers; (3) continuing to develop understanding of area; and (4) understanding that geometric figures can be analyzed and classified based on their properties such as having parallel sides, perpendicular sides, particular angle measures, and symmetry.

(1) Students generalize their understanding of place value to 1,000,000, understanding the relative sizes of numbers in each place. They use understandings of multiplication and division to develop fluency with multiplication and division of whole numbers. They apply their understanding of models for multiplication (equal-sized groups, arrays, area models), place value, and properties of operations, in particular the distributive property, as they develop, discuss, and use efficient, accurate, and generalizable methods to compute products of multi-digit whole numbers. Depending on the numbers and the context, they select and accurately apply appropriate methods to estimate or mentally calculate products. They develop fluency with efficient procedures for multiplying whole numbers; understand and explain why the procedures work based on place value and properties of operations; and use them to solve problems. Students apply their understanding of models for division, place value, properties of operations, and the relationship of division to multiplication as they develop, discuss, and use efficient, accurate, and generalizable procedures to find quotients involving multi-digit dividends. They select and accurately apply appropriate methods to estimate and mentally calculate quotients, and interpret remainders based upon the context.

(2) Students develop understanding of fraction equivalence and operations with fractions. They recognize that two different fractions can be equal (e.g., $15/9 = 5/3$), and they develop methods for generating and recognizing equivalent fractions. Students extend previous understandings about how fractions are built from unit fractions, composing fractions from unit fractions, decomposing fractions into unit fractions, and using the meaning of fractions and the meaning of multiplication to multiply a fraction by a whole number.

(3) Students develop their understanding of area. They understand and apply the area formula for rectangles and also find areas of shapes that can be decomposed into rectangles. They select appropriate units, strategies (e.g., decomposing shapes), and tools for solving problems that involve estimating and measuring area.

(4) Students describe, analyze, compare, and classify two-dimensional shapes. Through building, drawing, and analyzing two-dimensional shapes, students deepen their understanding of properties of two-dimensional objects and the use of them to solve problems involving symmetry.

Grade Level Overview

Operations and Algebraic Thinking

- Use the four operations with whole numbers to solve problems.
- Gain familiarity with factors and multiples.
- Generate and analyze patterns.

Number and Operations in Base Ten

- Generalize place value understanding for multi-digit whole numbers.
- Use place value understanding and properties of operations to perform multi-digit arithmetic.

Number and Operations—Fractions

- Extend understanding of fraction equivalence and ordering.
- Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.
- Understand decimal notation for fractions, and compare decimal fractions.

Measurement and Data

- Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.
- Represent and interpret data.
- Geometric measurement: understand concepts of angle and measure angles.

Geometry

- Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Operations and Algebraic Thinking 4.OA

Use the four operations with whole numbers to solve problems.

1. Interpret a multiplication equation as a comparison, e.g., interpret $5 \times 7 = 35$ as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.
2. Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.[19]
3. Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity; assess the reasonableness of answers using mental computation and estimation strategies including rounding.

Gain familiarity with factors and multiples.

4. Find the factor pairs for a whole number in the range 1-100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1-100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1-100 is prime or composite.

Generate and analyze patterns.

5. Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. *For example: Given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.*

Number and Operations in Base Ten[20] 4.NBT

Generalize place value understanding for multi-digit whole numbers.

1. Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. *For example, recognize that $700 \div 70 = 10$ by applying concepts of place value and division.*
2. Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits, using >, =, and < symbols to record the results of comparisons.
3. Use place value understanding to round multi-digit whole numbers to any place.

Use place value understanding and properties of operations to perform multi-digit arithmetic.[21]

4. Add and subtract multi-digit whole numbers accurately and efficiently using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.
5. Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.
6. Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

Number and Operations—Fractions[22] 4-NF

Extend understanding of fraction equivalence and ordering.

1. Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size; use this principle to recognize and generate equivalent fractions.
2. Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as $1/2$; recognize that valid comparisons rely on the two fractions referring to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.

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[19] See Glossary, Table 2.
[20] Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.
[21] A range of algorithms may be used.
[22] Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, 100.

Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.

3. Understand a fraction a/b with $a > 1$ as a sum of fractions $1/b$.
   a. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation (e.g., $3/8 = 1/8 + 1/8 + 1/8$ and $3/8 = 1/8 + 2/8$). Justify decompositions, e.g., by using a visual fraction model.
   b. Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.
   c. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.
4. Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.
   a. Understand a fraction a/b as a multiple of $1/b$. *For example, use a visual fraction model to represent $5/4$ as the product $5 \times (1/4)$, recording the conclusion by the equation $5/4 = 5 \times (1/4)$.*
   b. Understand a multiple of a/b as a multiple of $1/b$, and use this understanding to multiply a fraction by a whole number. *For example, use a visual fraction model to express $3 \times (2/5)$ as $6 \times (1/5)$, recognizing this product as $6/5$. (In general, $n \times (a/b) = (n \times a)/b$.)*
   c. Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. *For example: If each person at a party will eat $3/8$ of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?*

Understand decimal notation for fractions, and compare decimal fractions.

5. Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100.[23] *For example, express $3/10$ as $30/100$ and add $3/10 + 4/100 = 34/100$.*
6. Interpret a two-digit decimal as a fraction and use decimal notation for parts of wholes; round decimals to the nearest whole number by reasoning about their size. *For example, rewrite 1.62 as $1\ 62/100$; describe a length as 1.62 meters; locate 1.62 on a number line diagram and round 1.62 to 2.*
7. Compare two decimals to hundredths by reasoning about their size; recognize that valid comparisons rely on the two decimals referring to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual model.

Measurement and Data 4.MD

Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

1. Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; ℓ, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of smaller unit. Record measurement equivalents in a two-column table. *For example: Know that 1 ft is 12 times as long as 1 in; express the length of a 4 ft snake as 48 in; generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ...*
2. Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.
3. Apply the area and perimeter formulas for rectangles in real-world and mathematical problems. *For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.*

Represent and interpret data.

4. Make a line plot to display a data set of measurements in fractions of a unit ($1/2$, $1/4$, $1/8$). Solve problems involving addition and subtraction of fractions by using information presented in line plots. *For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.*

Geometric measurement: understand concepts of angle and measure angles.

5. Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement:

[23] Students who can generate equivalent fractions can develop strategies for adding fractions with unlike denominators in general. But addition and subtraction with unlike denominators in general is not a requirement at this grade.

a. An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through $1/360$ of a circle is called a "one-degree angle," and can be used to measure angles.

b. An angle that turns through *n* one-degree angles is said to have an angle measure of *n* degrees.

6. Measure angles in whole-number degrees using a protractor; sketch angles of specified measure.
7. Recognize angle measure as additive; when an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real-world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.

Geometry 4.G

Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

1. Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines; identify these in two-dimensional figures.
2. Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of specified size. Recognize right triangles as a category, and identify right triangles.
3. Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts; identify line-symmetric figures and draw lines of symmetry.

Mathematics | Grade 5

In Grade 5, instructional time should focus on four critical areas: (1) developing fluency with addition and subtraction of fractions, and developing understanding of the multiplication of fractions and of division of fractions in limited cases (unit fractions divided by whole numbers and whole numbers divided by unit fractions); (2) developing fluency with whole number operations; (3) integrating decimal fractions into the place value system and developing understanding of operations with decimals to hundredths; and (4) developing understanding of volume.

(1) Students apply their understanding of fractions and fraction models to represent the addition and subtraction of fractions with unlike denominators as equivalent calculations with like denominators. They develop fluency in calculating sums and differences of fractions, and make reasonable estimates of them. Students also use the meaning of fractions, of multiplication and division, and the relationship between multiplication and division to understand and explain why the procedures for multiplying and dividing fractions make sense. (Note: this is limited to the case of dividing unit fractions by whole numbers and whole numbers by unit fractions.)

(2) Students develop fluency with multi-digit addition, subtraction, and multiplication, and develop understanding of why division procedures work based on the meaning of base-ten numerals and properties of operations.

(3) Students apply their understandings of models for decimals, decimal notation, and properties of operations to add and subtract decimals to hundredths. They develop fluency in these computations, and make reasonable estimates of their results. Students use the relationship between decimals and fractions, as well as the relationship between finite decimals and whole numbers (i.e., a finite decimal multiplied by an appropriate power of 10 is a whole number), to understand and explain why the procedures for multiplying and dividing finite decimals make sense. They compute products and quotients of decimals to hundredths efficiently and accurately.

(4) Students recognize volume as an attribute of three-dimensional space. They understand that volume can be measured by finding the total number of same-size units of volume required to fill the space without gaps or overlaps. They understand that a 1-unit by 1-unit by 1-unit cube is the standard unit for measuring volume. They select appropriate units, strategies, and tools for solving problems that involve estimating and measuring volume. They decompose three-dimensional shapes and find volumes of right rectangular prisms by viewing them as decomposed into layers of arrays of cubes. They measure necessary attributes of shapes in order to determine volumes to solve real-world and mathematical problems.

Grade Level Overview

Operations and Algebraic Thinking

- Write and interpret numerical expressions.
- Analyze patterns and relationships.

Number and Operations in Base Ten

- Understand the place value system.
- Perform operations with multi-digit whole numbers and with decimals to hundredths.

Number and Operations—Fractions

- Use equivalent fractions as a strategy to add and subtract fractions.
- Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

Measurement and Data

- Convert like measurement units within a given measurement system.
- Represent and interpret data.
- Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.

Geometry

- Graph points on the coordinate plane to solve real-world and mathematical problems.
- Classify two-dimensional figures into categories based on their properties.

Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Operations and Algebraic Thinking 5.OA

Write and interpret numerical expressions.

1. Interpret grouping symbols in numerical expressions and evaluate expressions with grouping symbols.
2. Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. *For example, express the calculation "add 8 and 7, then multiply by 2" as $2 \times (8 + 7)$; recognize that $3 \times (18932 + 921)$ is three times as large as $18932 + 921$, without having to calculate the indicated sum or product.*

Analyze patterns and relationships.

3. Generate two numerical patterns using two given rules. Graph pairs of corresponding terms on a coordinate plane, and identify apparent relationships between corresponding terms. *For example, given the rule "Add 3" and the starting number 0, and given the rule "Add 6" and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.*

Number and Operations in Base Ten 5.NBT

Understand the place value system.

1. Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and $1/10$ of what it represents in the place to its left.
2. Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use positive integer exponents to denote powers of 10.
3. Read, write, and compare decimals to thousandths.
   a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., $347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (1/10) + 9 \times (1/100) + 2 \times (1/1000)$.
   b. Compare two decimals to thousandths based on meanings of the digits, using >, =, and < symbols to record the results of comparisons.
4. Use place value understanding to round decimals to any place.

Perform operations with multi-digit whole numbers and with decimals to hundredths.

5. Fluently add, subtract, and multiply multi-digit whole numbers using the standard algorithm for each operation.
6. Find quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division; express the quotient as a fraction or mixed number. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.
7. Add, subtract, multiply, and divide decimals of one or two digits, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

Number and Operations—Fractions 5-NF

Use equivalent fractions as a strategy to add and subtract fractions.

1. Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. *For example, $2/3 + 5/4 = 8/12 + 15/12 = 23/12$. (In general, $a/b + c/d = (ad + bc)/bd$.)*
2. Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. *For example, recognize an incorrect result $2/5 + 1/2 = 3/7$ by observing that $3/7 < 1/2$.*

Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

3. Interpret a fraction as the result of dividing the numerator by the denominator ($a/b = a \div b$); solve word problems involving division of whole numbers leading to fractional answers, e.g., by using visual fraction models or equations to represent the problem. *For example, interpret $3/4$ as the result of dividing 3 by 4, noting that $3/4$ multiplied by 4 equals 3 and that when 3 wholes are shared equally among 4 people each person has a share of size $3/4$. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?*

4. Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.
   a. Interpret the product $(a/b) \times q$ as *a* parts of a partition of *q* into *b* equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$. *For example, use a visual fraction model to show* $(2/3) \times 4 = 8/3$, *and create a story context for this equation; do the same with* $(2/3) \times (4/5) = 8/15$. *(In general,* $(a/b) \times (c/d) = ac/bd$.*)*
   b. Find the area of a rectangle with fractional side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths; multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.
5. Interpret multiplication as scaling (resizing), including by:
   a. Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.
   b. Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence $a/b = (n \times a)/(n \times b)$ to the effect of multiplying a/b by 1.
6. Solve real-world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.
7. Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.[24]
   a. Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. *For example, create a story context for* $(1/3) \div 4$ *and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that* $(1/3) \div 4 = 1/12$ *because* $(1/12) \times 4 = 1/3$.
   b. Interpret division of a whole number by a unit fraction, and compute such quotients. *For example, create a story context for* $4 \div (1/5)$ *and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that* $4 \div (1/5) = 20$ *because* $20 \times (1/5) = 4$.
   c. Solve real-world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. *For example, How much chocolate will each person get if 3 people share* $1/2$ *lb of chocolate equally? How many* $1/3$*-cup servings are in 2 cups of raisins?*

Measurement and Data 5.MD

Convert like measurement units within a given measurement system.

1. Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step real-world problems.

Represent and interpret data.

2. Make a line plot to display a data set of measurements in fractions of a unit ($1/2$, $1/4$, $1/8$). Use operations on fractions for this grade to solve problems involving information presented in line plots. *For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.*

Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.

3. Recognize volume as an attribute of solid figures and understand concepts of volume measurement.
   a. A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume.
   b. A solid figure which can be packed without gaps or overlaps using *n* unit cubes is said to have a volume of *n* cubic units.
4. Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.
5. Relate volume to the operations of multiplication and addition and solve real-world and mathematical problems involving volume.
   a. Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent three-fold whole-number products as volumes, e.g., to represent the associative property of multiplication.

[24] Students able to multiply fractions in general can develop strategies to divide fractions in general, by reasoning about the relationship between multiplication and division. But division of a fraction by a fraction is not a requirement at this grade.

b. Apply the formulas $V = \ell\, w\, h$ and $V = b\, h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real-world and mathematical problems;

c. Recognize volume as additive; find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real-world problems.

Geometry 5.G

Graph points on the coordinate plane to solve real-world and mathematical problems.

1. Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).
2. Represent real-world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.

Classify two-dimensional figures into categories based on their properties.

3. Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. *For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.*
4. Classify two-dimensional figures in a hierarchy based on properties.

Mathematics | Grade 6

In Grade 6, instructional time should focus on four critical areas: (1) connecting ratio and rate to whole number multiplication and division and using concepts of ratio and rate to solve problems; (2) completing understanding of division of fractions; (3) developing understanding of and using formulas to determine areas of two-dimensional shapes and distinguishing between volume and surface area of three-dimensional shapes; and (4) writing, interpreting, and using expressions and equations.

(1) Students use reasoning about multiplication and division of quantities to solve ratio and rate problems. By viewing equivalent ratios and rates as deriving from, and extending, pairs of rows (or columns) in the multiplication table, and by analyzing simple drawings that indicate the relative size of quantities, students extend multiplication and division to ratios and rates. Thus students expand the scope of problems for which they can use multiplication and division to solve problems, and they build on their understanding of fractions to understand ratios. Students solve a wide variety of problems involving ratios and rates.

(2) Students use the meaning of fractions, the meanings of multiplication and division, and the relationship between multiplication and division to understand and explain why the procedures for dividing fractions make sense. Students are able to use these operations to solve problems.

(3) Students reason about relationships among shapes to determine area, surface area, and volume. They find areas of right triangles, other triangles, and special quadrilaterals by decomposing these shapes, rearranging or removing pieces, and relating the shapes to rectangles. Using these methods, students discuss, develop, and justify formulas for areas of triangles and parallelograms. Students find areas of polygons and surface areas of prisms and pyramids by decomposition into pieces whose area they can determine. They reason about right rectangular prisms with rational sides to extend the formula for its volume to rational side lengths. They prepare for work on scale drawings and constructions in Grade 8 by drawing polygons in the coordinate plane.

(4) Students understand the use of variables in mathematical expressions. They write expressions and equations that correspond to given situations, evaluate expressions, and use expressions and formulas to solve problems. Students understand that expressions in different forms can be equivalent, and they use the properties of operations to rewrite expressions in equivalent forms. Students know that the solutions of an equation are the values of the variables that make the equation true. Students use properties of operations and the idea of maintaining the equality of both sides of an equation to solve simple one-step equations. Students construct and analyze tables, such as tables of quantities that are in equivalent ratios, and they use equations (such as $3x = y$) to describe relationships between quantities.

Students in Grade 6 develop their ability to think statistically. Students recognize that a typical data distribution does not have a definite center, and so different ways to measure center yield different values. The median measures center in the sense that it is roughly the middle value. The mean measures center in the sense that it is the value that each data point would take on if the total of the data values were redistributed fairly, and also in the sense that it is a balance point. Students learn to describe and summarize distributions of data, identifying clusters, peaks, gaps, and symmetry, considering the context in which the data was collected.

Grade Level Overview

Ratios and Proportional Relationships

- Understand ratio concepts and use ratio reasoning to solve problems.

The Number System

- Apply and extend previous understandings of multiplication and division to divide fractions by fractions.
- Apply and extend previous understandings of numbers to the system of rational numbers.

Expressions and Equations

- Apply and extend previous understandings of arithmetic to algebraic expressions.
- Reason about and solve one-variable equations and inequalities.
- Represent and analyze quantitative relationships between dependent and independent variables.

Geometry

- Solve real-world and mathematical problems involving area, surface area, and volume.

Statistics and Probability

- Develop understanding of statistical variability.
- Summarize and describe distributions.

Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Ratios and Proportional Relationships 6.RP

Understand ratio concepts and use ratio reasoning to solve problems.

1. Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. *For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes."*
2. Understand the concept of a unit rate a/b associated with a ratio $a:b$ with $b \neq 0$, and use rate language in the context of a ratio relationship. *For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is $3/4$ cup of flour for each cup of sugar." "We paid \$75 for 15 paperbacks, which is a rate of \$5 per paperback."* [1]
3. Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.
   a. Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.
   b. Solve unit rate problems including unit pricing and constant speed. *For example, If it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?*
   c. Find a percentage of a quantity as a rate per 100 (e.g., 30% of a quantity means $30/100$ times the quantity); solve problems involving finding the whole given a part and the percentage.
   d. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.

The Number System 6.NS

Apply and extend previous understandings of multiplication and division to divide fractions by fractions.

1. Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. *For example, create a story context for $(2/3) \div (3/4)$ and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that $(2/3) \div (3/4) = 8/9$ because $3/4$ of $8/9$ is $2/3$. (In general, $(a/b) \div (c/d) = ad/bc$.) How much chocolate will each person get if 3 people share $1/2$ lb of chocolate equally? How many $3/4$-cup servings are in $2/3$ of a cup of yogurt? How wide is a rectangular strip of land with length $3/4$ mi and area $1/2$ square mi?*
2. Fluently divide multi-digit numbers using the standard algorithm for each operation.

Apply and extend previous understandings of numbers to the system of rational numbers.

3. Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, debits/credits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.
4. Understand a rational number as a point on the number line. Extend number line diagrams and coordinate planes familiar from previous grades to represent negative numbers and their distance from 0.
   a. Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., $-(-3) = 3$, and that 0 is its own opposite.
   b. Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.
   c. Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.
5. Understand the ordering of rational numbers.
   a. Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. *For example, interpret $-3 > -7$ as a statement that -3 is located to the right of -7 on a number line oriented from left to right.*
   b. Write, interpret, and explain statements of order for rational numbers in real-world contexts. *For example, write $-3\ ^\circ C > -7\ ^\circ C$ to express the fact that $-3\ ^\circ C$ is warmer than $-7\ ^\circ C$.*
6. Understand absolute value and its relationship to the order of rational numbers.

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[1] Expectations for unit rates in this grade are limited to non-complex fractions.

a. Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. *For example, for an account balance of* -30 *dollars, write* $|-30| = 30$ *to describe the size of the debt in dollars.*

b. Distinguish comparisons of absolute value from statements of order. *For example, recognize that an account balance less than* -30 *dollars represents a debt greater than 30 dollars.*

7. Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane, including using coordinates and absolute value reasoning to find distances between points with the same first coordinate or the same second coordinate.

Expressions and Equations 6.EE

Apply and extend previous understandings of arithmetic to algebraic expressions.

1. Evaluate numerical expressions involving whole-number exponents.
2. Write, read, and evaluate expressions in which letters stand for numbers.
   a. Write expressions that record operations with numbers and with letters standing for numbers. *For example, express the calculation "Subtract y from 5" as* $5 - y$.
   b. Identify parts of an expression using mathematical language (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity. *For example, describe the expression* $2(8 + 7)$ *as a product of two factors; view* $(8 + 7)$ *as both a single entity and a sum of two terms.*
   c. Evaluate expressions by substituting values for their variables, including when using formulas in real-world problems. Perform arithmetic operations (including those involving whole-number exponents) in the conventional order when there are no parentheses to specify a particular order (Order of Operations). *For example, use the formulas* $V = s^3$ *and* $A = 6s^2$ *to find the volume and surface area of a cube with sides of length* $s = 1/2$.
3. Apply the properties of operations as strategies to generate equivalent expressions. *For example, apply the distributive property to the expression* $3(2 + x)$ *to produce the equivalent expression* $6 + 3x$; *apply properties of operations to* $y + y + y$ *to produce the equivalent expression* $3y$.
4. Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). *For example, the expressions* $y + y + y$ *and* $3y$ *are equivalent because they name the same number regardless of which number y stands for.*

Reason about and solve one-variable equations and inequalities.

5. Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.
6. Use variables to stand for numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can be used in cases where a number is unknown, or where, for the purpose at hand, it can be any number in a specified set.
7. Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p, q and x are all nonnegative rational numbers.
8. Write a statement of inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities graphically on a number line diagram.

Represent and analyze quantitative relationships between dependent and independent variables.

9. Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. *For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation* $d = 65t$ *to represent the relationship between distance and time.*

Geometry 6.G

Solve real-world and mathematical problems involving area, surface area, and volume.

1. Find area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.
2. Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the

prism. Apply the formulas $V = \ell\, w\, h$ and $V = b\, h$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.

3. Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.
4. Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.

Statistics and Probability 6.SP

Develop understanding of statistical variability.

1. Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. *For example, "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages.*
2. Understand that a set of data collected to answer a statistical question has a distribution which can be described by its overall shape, center and spread.
3. Recognize that a measure of center for a numerical data set summarizes all of its values using a single number, while a measure of variation describes how its values vary using a single number.

Summarize and describe distributions.

4. Display numerical data in plots on a number line, including dot plots, histograms, and box plots.
5. Summarize numerical data sets in relation to their context, such as by:
   a. Reporting the number of observations.
   b. Describing the nature of the attribute of investigation, including how it was measured and its units of measurement.
   c. Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data was gathered.
   d. Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data was gathered.

Mathematics | Grade 7

In Grade 7, instructional time should focus on four critical areas: (1) developing understanding of and applying proportional relationships; (2) developing understanding of operations with rational numbers and solving linear equations; (3) solving problems involving scale drawings and informal geometric constructions, and working with two- and three-dimensional shapes to solve problems involving area, surface area, and volume; and (4) drawing inferences about populations based on samples.

(1) Students extend their understanding of ratios and develop understanding of proportionality to solve single- and multi-step problems. Students use their understanding of ratios and proportionality to solve a wide variety of percent problems, including those involving discounts, interest, taxes, tips, and percent increase or decrease. Students solve problems about scale drawings by relating corresponding lengths between the objects or by using the fact that relationships of lengths within an object are preserved in similar objects. Students graph proportional relationships and understand the unit rate informally as a measure of the steepness of the related line, called the slope. They distinguish proportional relationships from other relationships.

(2) Students develop a unified understanding of number, recognizing fractions, decimals, and percents as different representations of rational numbers. Students extend addition, subtraction, multiplication, and division and their properties to all rational numbers, including integers and numbers represented by complex fractions and negative fractions. By applying the properties of operations, and by viewing negative numbers in terms of everyday contexts (e.g., amounts owed or temperatures below zero), students explain why the rules for adding, subtracting, multiplying, and dividing with negative numbers make sense. They use the arithmetic of rational numbers as they formulate and solve linear equations in one variable and use these equations to solve problems.

(3) Students continue their work with area from Grade 6, solving problems involving the area and circumference of a circle and surface area of three-dimensional objects. In preparation for work on congruence and similarity in Grade 8 they reason about relationships among two-dimensional figures using scale drawings and informal geometric constructions, and they gain familiarity with the relationships between angles formed by intersecting lines. Students work with three-dimensional figures, relating them to two-dimensional figures by taking slices. They solve real-world and mathematical problems involving area, surface area, and volume of two- and three-dimensional objects made up from triangles, quadrilaterals, polygons, cubes and right prisms.

(4) Students build on their previous work with single data distributions to compare two data distributions and address questions about differences between populations. They begin informal work with random sampling to generate data sets and learn about the importance of representative samples for drawing inferences.

Grade Level Overview

Ratios and Proportional Relationships	• Analyze proportional relationships and use them to solve real-world and mathematical problems.	1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 6. Attend to precision. 7. Look for and make use of structure. 8. Look for and express regularity in repeated reasoning.	Mathematical Practices
The Number System	• Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.		
Expressions and Equations	• Use properties of operations to generate equivalent expressions. • Solve real-life and mathematical problems using numerical and algebraic expressions and equations.		
Geometry	• Draw, construct and describe geometrical figures and describe the relationships between them. • Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.		
Statistics and Probability	• Use random sampling to draw inferences about a population • Draw informal comparative inferences about two populations. • Investigate chance processes and develop, use, and evaluate probability models.		

Ratios and Proportional Relationships 7.RP

Analyze proportional relationships and use them to solve real-world and mathematical problems.

1. Compute unit rates associated with ratios of nonnegative rational numbers, including ratios of lengths, areas and other quantities measured in like or different units. *For example, If a person walks ½ mile in each ¼ hour, compute the unit rate as the complex fraction ½ / ¼ miles per hour, equivalently 2 miles per hour.*
2. Recognize and represent proportional relationships between covarying quantities.
   a. Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.
   b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.
   c. Represent proportional relationships by equations. *For example, total cost, t, is proportional to the number, n, purchased at a constant price, p; this relationship can be expressed as $t = pn$.*
   d. Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points $(0, 0)$ and $(1, r)$ where r is the unit rate.
3. Use proportional relationships to solve multistep ratio and percent problems. *Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.*

The Number System 7.NS

Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.

1. Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.
   a. Describe situations in which opposite quantities combine to make 0. *For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged.*
   b. Understand $p + q$ as the number located a distance $|q|$ from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.
   c. Understand subtraction of rational numbers as adding the additive inverse, $p – q = p + (–q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.
   d. Apply properties of operations as strategies to add and subtract rational numbers.
2. Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.
   a. Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(–1)(–1) = 1$ and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.
   b. Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p/q is a rational number, then $–(p/q) = (–p)/q = p/(–q)$. Interpret products of rational numbers by describing real-world contexts.
   c. Apply properties of operations as strategies to multiply and divide rational numbers.
   d. Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.
3. Solve real-world and mathematical problems involving the four operations with rational numbers.[2]

Expressions and Equations 7.EE

Use properties of operations to generate equivalent expressions.

1. Know and apply the properties of integer exponents to generate equivalent numerical expressions. *For example, $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$.*

[2] Computations with rational numbers extend the rules for manipulating fractions to complex fractions.

2. Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.
3. Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. *For example, $a + 0.05a = 1.05a$ means that "increase by 5%" is the same as "multiply by 1.05."*

Solve real-life and mathematical problems using numerical and algebraic expressions and equations.

4. Use numbers expressed in the form of a single digit times a whole-number power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. *For example, estimate the population of the United States as 3×10^8 and the population of the world as 7×10^9, and determine that the world population is more than 20 times larger.*
5. Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations as strategies for calculating with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. *For example: If a woman making $25 an hour gets a 10% raise, she will make an additional $1/10$ of her salary an hour, or $2.50, for a new salary of $27.50. If you want to place a towel bar $9\ 3/4$ inches long in the center of a door that is $27\ 1/2$ inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.*
6. Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.
   a. Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare the algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. *For example, The perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?*
   b. Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem. *For example, As a salesperson, you are paid $50 per week plus $3 per sale. This week you want your pay to be at least $100. Write an inequality for the number of sales you need to make, and describe the solutions.*

Geometry 7.G

Draw, construct, and describe geometrical figures and describe the relationships between them.

1. Solve problems involving scale drawings of geometric figures in the coordinate plane, such as computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.
2. Draw (freehand, with ruler and protractor, and with technology) geometric shapes from given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the triangle is uniquely defined, ambiguously defined or nonexistent.
3. Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.

Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.

4. Know the formulas for the area and circumference of a circle and solve problems; give an informal derivation of the relationship between the circumference and area of a circle.
5. Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.
6. Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.

Statistics and Probability 7.SP

Use random sampling to draw inferences about a population.

1. Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.
2. Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. *For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be.*

Draw informal comparative inferences about two populations

3. Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability. *For example, the mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team, about twice the variability (mean average deviation) on either team; on a dot plot, the separation between the two distributions of heights is noticeable.*
4. Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. *For example, decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth-grade science book.*

Investigate chance processes and develop, use, and evaluate probability models.

5. Understand that the probability of a chance event is a number between 0 and 1 expressing the likelihood of that event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around ½ indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.
6. Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability. *For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times.*
7. Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.
   a. Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. *For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected.*
   b. Develop a possibly non-uniform probability model by observing frequencies in data generated from a chance process. *For example, find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?*
8. Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.
   a. Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.
   b. Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., "rolling double sixes"), identify the outcomes for which the event occurs.
   c. Design and use a simulation to generate frequencies for compound events. *For example, use random digits as a simulation tool to approximate the answer to the question: if 40% of donors have type A blood, what is the probability that it will take at least 4 donors to find one with type A blood?*

Mathematics | Grade 8

In Grade 8, instructional time should focus on three critical areas: (1) solving linear equations and systems of linear equations; (2) grasping the concept of a function and using functions to describe quantitative relationships; (3) analyzing two- and three-dimensional space and figures using distance, angle, similarity, and congruence, and understanding and applying the Pythagorean Theorem.

(1) Students use linear equations and systems of linear equations to represent, analyze, and solve a variety of problems. Students recognize proportions ($y/x = m$ or $y = mx$) as a special case of linear equations, $y = mx + b$, understanding that the constant of proportionality (m) is the slope and the graphs are lines through the origin. They understand that the slope (m) of a line is a constant rate of change, so that if the input or x-coordinate changes by an amount A, the output or y-coordinate changes by the amount $m \cdot A$. Students also formulate and solve linear equations in one variable and use these equations to solve problems. Students also use a linear equation to describe the association between two quantities in a data set (such as arm span vs. height for students in a classroom). At this grade, fitting the model, and assessing its fit to the data are done informally. Interpreting the model in the context of the data requires students to express a relationship between the two quantities in question.

Students strategically choose and efficiently implement procedures to solve linear equations in one variable, understanding that when they use the properties of equality and the concept of logical equivalence, they maintain the solutions of the original equation. Students solve systems of two linear equations in two variables and relate the systems to pairs of lines in the plane; these intersect, are parallel, or are the same line. Students use linear equations, systems of linear equations, linear functions, and their understanding of slope of a line to analyze situations and solve problems.

(2) Students grasp the concept of a function as a rule that assigns to each element of its domain exactly one element of its range. They use function notation and understand that functions describe situations where one quantity determines another. They can translate among verbal, tabular, graphical, and algebraic representations of functions (noting that tabular and graphical representations are usually only partial representations), and they describe how aspects of the function are reflected in the different representations.

(3) Students use ideas about distance and angles, how they behave under translations, rotations, reflections, and dilations, and ideas about congruence and similarity to describe and analyze two-dimensional figures and to solve problems. Students prove that the angles in a triangle add up to a straight line, and that various configurations of lines give rise to similar triangles because of the angles created when a transversal cuts parallel lines. Students understand the statement of the Pythagorean Theorem and its converse, and can explain why the Pythagorean Theorem is valid, for example, by decomposing a square in two different ways. They apply the Pythagorean Theorem to find distances between points on the coordinate plane, to find lengths, and to analyze polygons. Students complete their work on volume by solving problems involving cones, cylinders, and spheres.

Grade Level Overview

The Number System

- Know that there are numbers that are not rational, and approximate them by rational numbers.

Expressions and Equations

- Work with radicals and integer exponents.
- Understand the connections between proportional relationships, lines, and linear equations.
- Analyze and solve linear equations and pairs of simultaneous linear equations.

Functions

- Define, evaluate, and compare functions.
- Use functions to model relationships between quantities.

Geometry

- Understand congruence and similarity using physical models, transparencies, or geometry software.
- Understand and apply the Pythagorean Theorem.
- Solve real-world and mathematical problems involving volume of cylinders, cones and spheres.

Statistics and Probability

- Investigate patterns of association in bivariate data.

Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

The Number System 8.NS

Know that there are numbers that are not rational, and approximate them by rational numbers.

1. Understand informally that every number has a decimal expansion; the rational numbers are those with decimal expansions that terminate in 0s or eventually repeat. Know that other numbers are called irrational.
2. Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., π^2). *For example, by truncating the decimal expansion of* $\sqrt{2}$*, show that* $\sqrt{2}$ *is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.*

Expressions and Equations 8.EE

Work with radicals and integer exponents.

1. Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational.
2. Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.

Understand the connections between proportional relationships, lines, and linear equations.

3. Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. *For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.*
4. Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation $y = mx$ for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at b.

Analyze and solve linear equations and pairs of simultaneous linear equations.

5. Solve linear equations in one variable.
   a. Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$, or $a = b$ results (where a and b are different numbers).
   b. Solve linear equations with rational number coefficients, including equations that require expanding expressions using the distributive property and collecting like terms.
6. Analyze and solve pairs of simultaneous linear equations.
   a. Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.
   b. Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. *For example,* $3x + 2y = 5$ *and* $3x + 2y = 6$ *have no solution because* $3x + 2y$ *cannot simultaneously be 5 and 6.*
   c. Solve real-world and mathematical problems leading to two linear equations in two variables. *For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair.*

Functions 8.F

Define, evaluate, and compare functions.

1. Understand that a function from one set (called the domain) to another set (called the range) is a rule that assigns to each element of the domain (an input) exactly one element of the range (the corresponding output). The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.[3]
2. Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.*

[3] Function notation is not required in Grade 8.

3. Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. *For example, the function $A = s^2$ giving the area of a square as a function of its side length is not linear because its graph contains the points (1,1), (2,4) and (3,9), which are not on a straight line.*

Use functions to model relationships between quantities.

4. Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship; from two (x, y) values, including reading these from a table; or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.
5. Describe qualitatively the functional relationship between two quantities by reading a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

Geometry 8.G

Understand congruence and similarity using physical models, transparencies, or geometry software.

1. Verify experimentally the properties of rotations, reflections, and translations:
   a. Lines are taken to lines, and line segments to line segments of the same length.
   b. Angles are taken to angles of the same measure.
   c. Parallel lines are taken to parallel lines.
2. Understand that a plane figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.
3. Describe the effect of dilations, translations, rotations and reflections on figures using coordinates.
4. Understand that a plane figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar figures, describe a sequence that exhibits the similarity between them.
5. Use informal arguments to establish facts about the angle sum and exterior angle of triangles, and about the angles created when parallel lines are cut by a transversal. *For example, arrange three copies of the same triangle so that the three angles appear to form a line, and give an argument in terms of transversals why this is so.*

Understand and apply the Pythagorean Theorem.

6. Explain a proof of the Pythagorean Theorem and its converse.
7. Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.
8. Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.

Solve real-world and mathematical problems involving volume of cylinders, cones and spheres.

9. Know the formulas for the volume of cones, cylinders and spheres and solve real-world and mathematical problems.

Statistics and Probability 8.SP

Investigate patterns of association in bivariate data.

1. Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.
2. Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.
3. Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. *For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.*
4. Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. *For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?*

Mathematics Standards for High School

Where is the College and Career Readiness line drawn?

The high school standards specify the mathematics that all students should study in order to be college and career ready. Additional mathematics that students should learn in order to take advanced courses such as calculus, advanced statistics, or discrete mathematics is indicated by (+), as in this example:

> (+) Represent complex numbers on the complex plane in rectangular and polar form (including real and imaginary numbers).

Standards with a (+) symbol are beyond the college and career readiness threshold, but may appear in courses intended for all students. Any standard without a (+) symbol is intended to be in the common mathematics curriculum for all college and career ready students.

How are the high school standards organized?

The high school standards are listed in conceptual categories:

- Number and Quantity
- Algebra
- Functions
- Modeling
- Geometry
- Statistics and Probability.

Conceptual categories portray a coherent view of core high school mathematics; a student's work with functions, for example, crosses a number of traditional course boundaries, potentially up through and including calculus.

Modeling standards

Modeling is best interpreted not as a collection of isolated topics but in relation to other standards. Making mathematical models is a Standard for Mathematical Practice, and specific modeling standards appear throughout the high school standards indicated by a star symbol (★).

Mathematics | High School—Number and Quantity

Numbers and Number Systems. During the years from kindergarten to eighth grade, students must repeatedly extend their conception of number. At first, "number" means "counting number": 1, 2, 3.... Soon after that, 0 is used to represent "none" and the whole numbers are formed by the counting numbers together with zero. The next extension is fractions. At first, fractions are barely numbers and tied strongly to pictorial representations. Yet by the time students understand division of fractions, they have a strong concept of fractions as numbers and have connected them, via their decimal representations, with the base-ten system used to represent the whole numbers. During middle school, fractions are augmented by negative fractions to form the rational numbers. In Grade 8, students extend this system once more, augmenting the rational numbers with the irrational numbers to form the real numbers. In high school, students will be exposed to yet another extension of number, when the real numbers are augmented by the imaginary numbers to form the complex numbers.

This ascent through number systems makes it fair to ask: what does the word *number* mean that it can mean all of these things? One possible answer is that a number is something that can be used to do mathematics: calculate, solve equations, or represent measurements.

With each extension of number, the meanings of addition, subtraction, multiplication, and division are extended. In each new number system—integers, rational numbers, real numbers, and complex numbers—the four operations stay the same in two important ways: They have the commutative, associative, and distributive properties and their new meanings are consistent with their previous meanings. For example, multiplication by a whole number can be interpreted as repeated addition of the multiplicand in extensions of the whole numbers.

Extending the properties of whole-number exponents leads to new and productive notation. For example, properties of whole-number exponents suggest that $(5^{1/3})^3$ should be $5^{(1/3)\cdot 3} = 5^1 = 5$ and that $5^{1/3}$ should be the cube root of 5.

Calculators can provide ways for students to become better acquainted with these new number systems and their notation. They can be used to generate data for numerical experiments, to help understand the workings of matrix, vector, and complex number algebra, and to experiment with non-integer exponents.

Quantities. In their work in measurement up through Grade 8, students primarily measure commonly used attributes such as length, area, and volume. In high school, students encounter a wider variety of units in modeling, e.g., acceleration, currency conversions, derived quantities such as person-hours and heating degree days, social science rates such as per-capita income, and rates in everyday life such as points scored per game or batting averages. They also encounter novel situations in which they themselves must conceive the attributes of interest. For example, to find a good measure of overall highway safety, they might propose measures such as fatalities per year, fatalities per year per driver, or fatalities per vehicle-mile traveled. Such a conceptual process might be called quantification. Quantification is important for science, as when surface area suddenly "stands out" as an important variable in evaporation. Quantification is also important for companies, which must conceptualize relevant attributes and create or choose suitable measures for them.

Content Overview

The Real Number System	• Extend the properties of exponents to rational exponents • Classify numbers as rational or irrational		1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 6. Attend to precision. 7. Look for and make use of structure. 8. Look for and express regularity in repeated reasoning.	Mathematical Practices
Quantities	• Reason quantitatively and use units to solve problems			
The Complex Number System	• Perform arithmetic operations with complex numbers • Represent complex numbers and their operations on the complex plane • Use complex numbers in polynomial identities and equations			
Vector and Matrix Quantities	• Represent and model with vector quantities • Perform operations on vectors • Perform operations on matrices and use matrices in applications			

The Real Number System N-RN

Extend the properties of exponents to rational exponents

1. Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents. *For example, we define* $5^{1/3}$ *to be the cube root of* 5 *because we want* $(5^{1/3})^3 = 5^{(1/3)3}$ *to hold, so* $(5^{1/3})^3$ *must equal* 5.
2. Rewrite expressions involving radicals and rational exponents using the properties of exponents.

Use properties of rational and irrational numbers

3. Explain why sums and products of rational numbers are rational, that the sum of a rational number and an irrational number is irrational, and that the product of a nonzero rational number and an irrational number is irrational.

Quantities★ N-Q

Reason quantitatively and use units to solve problems

1. Compare measurements of two quantities of the same type (e.g., two lengths or two weights) expressed in different units to decide which quantity is larger.
2. Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.
3. Define appropriate quantities for the purpose of descriptive modeling.
4. Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

The Complex Number System N-CN

Perform arithmetic operations with complex numbers

1. Know there is a complex number i such that $i^2 = -1$, and every complex number has the form $a + bi$ with a and b real.
2. Use the relation $i^2 = -1$ and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers.
3. (+) Find the conjugate of a complex number; use conjugates to find moduli and quotients of complex numbers.

Represent complex numbers and their operations on the complex plane

4. (+) Represent complex numbers on the complex plane in rectangular and polar form (including real and imaginary numbers), and explain why the rectangular and polar forms of a given complex number represent the same number.
5. (+) Represent addition, subtraction, multiplication, and conjugation of complex numbers geometrically on the complex plane; use properties of this representation for computation. *For example,* $(1 - \sqrt{3}i)^3 = 8$ *because* $(1 - \sqrt{3}i)$ *has modulus* 2 *and argument* 120°.
6. (+) Calculate the distance between numbers in the complex plane as the modulus of the difference, and the midpoint of a segment as the average of the numbers at its endpoints.

Use complex numbers in polynomial identities and equations

7. Solve quadratic equations with real coefficients that have complex solutions.
8. (+) Extend polynomial identities to the complex numbers. *For example, rewrite* $x^2 + 4$ *as* $(x + 2i)(x - 2i)$.
9. (+) Know the Fundamental Theorem of Algebra; show that it is true for quadratic polynomials.

(+) Vector and Matrix Quantities N-VM

Represent and model with vector quantities.

1. Understand that vector quantities have both magnitude and direction. Represent vector quantities by directed line segments, and use appropriate symbols for vectors and their magnitudes (e.g., $\mathbf{v}$, $|\mathbf{v}|$, $||\mathbf{v}||$, v).
2. Find the components of a vector by subtracting the coordinates of an initial point from the coordinates of a terminal point.
3. Solve problems involving velocity and other quantities that can be represented by vectors.★

Perform operations on vectors.

4. Add and subtract vectors.
   a. Add vectors end-to-end, component-wise, and by the parallelogram rule. Understand that the magnitude of a sum of two vectors is typically not the sum of the magnitudes.
   b. Given two vectors in magnitude and direction form, determine the magnitude and direction of their sum.
   c. Understand that vector subtraction $\mathbf{v} - \mathbf{w}$ is defined as $\mathbf{v} + (-\mathbf{w})$, where $-\mathbf{w}$ is the additive inverse of $\mathbf{w}$, with the same magnitude as $\mathbf{w}$ and pointing in the opposite direction. Represent vector subtraction graphically by connecting the tips in the appropriate order, and perform vector subtraction component-wise.
5. Multiply a vector $\mathbf{v}$ by a scalar.
   a. Represent scalar multiplication graphically by scaling vectors and possibly reversing their direction; perform scalar multiplication component-wise, e.g., as $c(v_x, v_y) = (cv_x, cv_y)$.
   b. Compute the magnitude of a scalar multiple $c\mathbf{v}$ using $||c\mathbf{v}|| = |c|v$.
   c. Understand that when $|c|v \neq 0$, the direction of $c\mathbf{v}$ is either along $\mathbf{v}$ (for $c > 0$) or against $\mathbf{v}$ (for $c < 0$).

Perform operations on matrices and use matrices in applications.★

6. Use matrices to represent and manipulate data, e.g., to represent payoffs or incidence relationships in a network.
7. Multiply matrices by scalars to produce new matrices, e.g., as when all of the payoffs in a game are doubled.
8. Add, subtract, and multiply matrices of appropriate dimensions.
9. Understand that, unlike multiplication of numbers, matrix multiplication for square matrices is not a commutative operation, but still satisfies the associative and distributive properties.
10. Understand that the zero and identity matrices play a role in matrix addition and multiplication similar to the role of 0 and 1 in the real numbers. The determinant of a square matrix is nonzero if and only if the matrix has a multiplicative inverse.
11. Multiply a vector (regarded as a matrix with one column) by a matrix of suitable dimensions to produce another vector. Understand a matrix as a transformation of vectors.
12. Understand a 2 × 2 matrix as a transformation of the plane, and interpret the absolute value of the determinant in terms of area.

Mathematics | High School—Algebra

Expressions. An expression is a record of a computation with numbers and symbols that represent numbers, arithmetic operations, exponentiation, and, at more advanced levels, the operation of evaluating a function. Conventions about the use of parentheses and the order of operations assure that each expression is unambiguous. Creating an expression that describes a computation involving a general quantity requires the ability to express the computation in general terms, abstracting from specific instances.

Reading an expression with comprehension involves analysis of its underlying structure. This may suggest a different but equivalent way of writing the expression 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. Rewriting $p + 0.05p$ as $1.05p$ shows that adding a tax is the same as multiplying the price by a constant factor.

Algebraic manipulations are governed by the properties of operations and exponents, and the conventions of algebraic notation. At times, an expression is the result of applying operations to simpler expressions. For example, $p + 0.05p$ is the sum of the simpler expressions p and $0.05p$. Viewing an expression as the result of operation on simpler expressions can sometimes clarify its underlying structure.

A spreadsheet or a computer algebra system can be used to experiment with algebraic expressions, perform complicated algebraic manipulations, and understand how algebraic manipulations behave.

Equations and inequalities. An equation is a statement of equality between two expressions, often viewed as a question asking for which values of the variables the expressions on either side are in fact equal. These values are the solutions to the equation. An identity is true for all numbers; identities are often developed by rewriting an expression in an equivalent form.

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 of numbers, which can be plotted in the coordinate plane. Two or more equations and/or inequalities form a system. A solution for such a system must satisfy every equation and inequality in the system.

An equation can often be solved by successively deducing from it one or more simpler equations. 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, but have a solution in a larger system. For example, the solution of $x + 1 = 0$ is an integer, not a whole number; the solution of $2x + 1 = 0$ is a rational number, not an integer; the solutions of $x^2 - 2 = 0$ are real numbers, not rational numbers; and the solutions of $x^2 + 2 = 0$ are complex numbers, not real numbers.

The same solution techniques used to solve equations can be used to rearrange formulas. For example, the formula for the area of a trapezoid, $A = ((b_1+b_2)/2)h$, can be solved for h using the same deductive process.

Inequalities can be solved by reasoning about the properties of inequality. Many, but not all, of the properties of equality continue to hold for inequalities and can be useful in solving them.

Connections to Functions and Modeling. Expressions can define functions, and equivalent expressions define the same function. Asking when two functions have the same value for the same input leads to an equation; graphing the two functions allows for finding approximate solutions of the equation. Converting a verbal description to an equation, inequality, or system of these is an essential skill in modeling.

Seeing Structure in Expressions	• Interpret the structure of expressions • Write expressions in equivalent forms to solve problems		1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 6. Attend to precision. 7. Look for and make use of structure. 8. Look for and express regularity in repeated reasoning.	Mathematical Practices
Arithmetic with Polynomials and Rational Functions	• Perform arithmetic operations on polynomials • Understand the relationship between zeros and factors of polynomials • Use polynomial identities to solve problems • Rewrite and graph rational functions			
Creating Equations	• Create equations that describe numbers or relationships			
Reasoning with Equations and Inequalities	• Understand solving equations as a process of reasoning and explain the reasoning • Solve equations and inequalities in one variable • Solve systems of equations • Represent and solve equations and inequalities graphically			

Seeing Structure in Expressions A-SSE

Interpret the structure of expressions

1. Interpret expressions that represent a quantity in terms of its context.★
   a. Interpret parts of an expression, such as terms, factors, and coefficients.
   b. Interpret complicated expressions by viewing one or more of their parts as a single entity. *For example, interpret $P(1+r)^n$ as the product of P and a factor not depending on P.*
2. Use the structure of an expression to identify ways to rewrite it. *For example, see $x^4 - y^4$ as $(x^2)^2 - (y^2)^2$, thus recognizing it as a difference of squares that can be factored as $(x^2 - y^2)(x^2 + y^2)$.*

Write expressions in equivalent forms to solve problems

3. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.★
   a. Factor a quadratic expression to reveal the zeros of the function it defines.
   b. Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.
   c. Use the properties of exponents to transform expressions for exponential functions. *For example the expression 1.15^t can be rewritten as $(1.15^{1/12})^{12t} \approx 1.012^{12t}$ to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.*
4. Derive the formula for the sum of a finite geometric series (when the common ratio is not 1), and use the formula to solve problems. *For example, calculate mortgage payments.*★

Arithmetic with Polynomials and Rational Expressions A-APR

Perform arithmetic operations on polynomials

1. Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.

Understand the relationship between zeros and factors of polynomials

2. Understand the Remainder Theorem: For a polynomial $p(x)$ and a number a, the remainder on division by $x - a$ is $p(a)$, so $p(a) = 0$ if and only if $(x - a)$ is a factor of $p(x)$.
3. Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial.

Use polynomial identities to solve problems

4. Prove polynomial identities and use them to describe numerical relationships. *For example, the polynomial identity* $(x^2 + y^2)^2 = (x^2 - y^2)^2 + (2xy)^2$ *can be used to generate Pythagorean triples.*
5. (+) Understand that the Binomial Theorem gives the expansion of $(x + y)^n$ in powers of x and y for a positive integer n, where x and y are any numbers, with coefficients determined for example by Pascal's Triangle. The Binomial Theorem can be proved by mathematical induction or by a combinatorial argument.

Rewrite rational expressions

6. Rewrite simple rational expressions in different forms; write $a(x)/b(x)$ in the form $q(x) + r(x)/b(x)$, where $a(x)$, $b(x)$, $q(x)$, and $r(x)$ are polynomials with the degree of $r(x)$ less than the degree of $b(x)$, using inspection, long division, or, for the more complicated examples, a computer algebra system.
7. (+) Understand that rational expressions form a system analogous to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression; add, subtract, multiply, and divide rational expressions.

Creating Equations* A-CED

Create equations that describe numbers or relationships

1. Create equations and inequalities in one variable and use them to solve problems. *Include equations arising from linear and quadratic functions, and simple rational and exponential functions.*
2. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
3. Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context. *For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.*
4. Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. *For example, rearrange Ohm's law $V = IR$ to highlight resistance R.*

Reasoning with Equations and Inequalities A-REI

Understand solving equations as a process of reasoning and explain the reasoning

1. Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.
2. Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.

Solve equations and inequalities in one variable

3. Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters. Graph the solution set of an inequality on a number line.
4. Solve quadratic equations in one variable.
   a. Understand that the method of completing the square transforms any quadratic equation in x into an equation of the form $(x - p)^2 = q$ that has the same solutions. This leads to the quadratic formula.
   b. Solve by inspection (e.g., for $x^2 = 49$), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as $a \pm bi$ for real numbers a and b.

Solve systems of equations

5. Understand that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.
6. Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.
7. Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically. *For example, find the points of intersection between the line $y = -3x$ and the circle $x^2 + y^2 = 3$.*
8. (+) Represent a system of linear equations as a single matrix equation in a vector variable.

9. (+) Find the inverse of a matrix if it exists and use it to solve systems of linear equations (using technology for matrices of dimension 3×3 or greater).

Represent and solve equations and inequalities graphically

10. Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a straight line).
11. Explain why the x-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.★
12. Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.

Mathematics | High School—Functions

Functions describe 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 we continually make theories about dependencies between quantities in nature and society, 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 car to drive 100 miles is a function of the car's speed in miles per hour, v; the rule $T(v) = 100/v$ expresses this relationship algebraically and defines a function whose name is T.

The set of 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.

A function can be described in various ways, such as by a graph (e.g., the trace of a seismograph); by a verbal rule, as in, "I'll give you a state, you give me the capital city;" by an algebraic expression like $f(x) = a + bx$; or by a recursive rule. The graph of a function is often a useful way of visualizing the relationship of the function models, and manipulating a mathematical expression for a function can throw light on the function's properties.

Functions presented as expressions can model many important phenomena. 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 a constant term of zero describe proportional relationships.

A graphing utility or a computer algebra system can be used to experiment with properties of these functions and their graphs and to build computational models of functions, including recursively defined functions.

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. Questions about when two functions have the same value for the same input lead to equations, whose solutions can be visualized from the intersection of their graphs. Because functions describe relationships between quantities, they are frequently used in modeling. Sometimes functions are defined by a recursive process, which can be displayed effectively using a spreadsheet or other technology.

Content Overview

Interpreting Functions	• Understand the concept of a function and use function notation • Interpret functions that arise in applications in terms of the context • Analyze functions using different representations		1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 6. Attend to precision. 7. Look for and make use of structure. 8. Look for and express regularity in repeated reasoning.	Mathematical Practices
Building Functions	• Build a function that models a relationship between two quantities • Build new functions from existing functions			
Linear, Quadratic, and Exponential Models	• Construct and compare linear and exponential models and solve problems • Interpret expressions for functions in terms of the situation they model			
Trigonometric Functions	• Extend the domain of trigonometric functions using the unit circle • Model periodic phenomena with trigonometric functions • Prove and apply trigonometric identities			

Interpreting Functions F-IF

Understand the concept of a function and use function notation

1. Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then $f(x)$ denotes the output of f corresponding to the input x. The graph of f is the graph of the equation $y = f(x)$.
2. Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.
3. Understand that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. *For example, the Fibonacci sequence is defined recursively by $f(0) = f(1) = 1$, $f(n+1) = f(n) + f(n-1)$ for $n \geq 1$.*

Interpret functions that arise in applications in terms of the context

4. For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. *Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.*★
5. Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. *For example, if the function h(n) gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function.*★
6. Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.★

Analyze functions using different representations

7. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.★
   a. Graph linear and quadratic functions and show intercepts, maxima, and minima.
   b. Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.
   c. Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior.
   d. (+) Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior.
   e. Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.
8. Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.
   a. Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context.
   b. Use the properties of exponents to interpret expressions for exponential functions. *For example, identify percent rate of change in functions such as* $y = (1.02)^t$, $y = (0.97)^t$, $y = (1.01)^{12t}$, $y = (1.2)^{t/10}$, *and classify them as representing exponential growth or decay.*
9. Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum.*

Building Functions F-BF

Build a function that models a relationship between two quantities

1. Write a function that describes a relationship between two quantities.★
   a. Determine an explicit expression, a recursive process, or steps for calculation from a context.
   b. Combine standard function types using arithmetic operations. *For example, build a function that models the temperature of a cooling body by adding a constant function to a decaying exponential, and relate these functions to the model.*
   c. (+) Compose functions. *For example, if $f(t)$ is the height of a falling body after t seconds, $f(t - 12)$ is the height of the same body dropped 12 seconds later.*
2. Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.★

Build new functions from existing functions

3. Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k\,f(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. *Include recognizing even and odd functions from their graphs and algebraic expressions for them.*
4. Find inverse functions.
   a. Solve an equation of the form $f(x) = c$ for a simple function f that has an inverse and write an expression for the inverse. *For example, $f(x) = 2\,x^3$ or $f(x) = (x+1)/(x-1)$ for $x \neq 1$.*
   b. (+) Verify by composition that one function is the inverse of another.
   c. (+) Read values of an inverse function from a graph or a table, given that the function has an inverse.
   d. (+) Produce an invertible function from a non-invertible function by restricting the domain.

Linear, Quadratic, and Exponential Models★ F-LQE

Construct and compare linear, quadratic, and exponential models and solve problems

1. Distinguish between situations that can be modeled with linear functions and with exponential functions.
   a. Understand that linear functions grow by equal differences over equal intervals; exponential functions grow by equal factors over equal intervals.
   b. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.
   c. Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.
2. Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).

3. Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.
4. For exponential models, express as a logarithm the solution to $a\,b^{ct} = d$ where a, c, and d are numbers and the base b is 2, 10, or e; evaluate the logarithm using technology.

Interpret expressions for functions in terms of the situation they model

5. Interpret the parameters in a linear, quadratic, or exponential function in terms of a context.

Trigonometric Functions F-TF

Extend the domain of trigonometric functions using the unit circle

1. Understand that the radian measure of an angle is the length of the arc on the unit circle subtended by the angle.
2. Explain how the unit circle in the coordinate plane enables the extension of trigonometric functions to all real numbers, interpreted as radian measures of angles traversed counterclockwise around the unit circle.
3. (+) Use special triangles to determine geometrically the values of sine, cosine, tangent for $\pi/3$, $\pi/4$ and $\pi/6$, and use the unit circle to express the values of sine, cosine, and tangent for $\pi-x$, $\pi+x$, and $2\pi-x$ in terms of their values for x, where x is any real number.
4. (+) Use the unit circle to explain symmetry (odd and even) and periodicity of trigonometric functions.

Model periodic phenomena with trigonometric functions

5. Choose trigonometric functions to model periodic phenomena with specified amplitude, frequency, and midline.★
6. (+) Understand that restricting a trigonometric function to a domain on which it is always increasing or always decreasing allows its inverse to be constructed.
7. (+) Use inverse functions to solve trigonometric equations that arise in modeling contexts; evaluate the solutions using technology, and interpret them in terms of the context.★

Prove and apply trigonometric identities

8. Prove the Pythagorean identity $\sin^2(\theta) + \cos^2(\theta) = 1$ and use it to calculate trigonometric ratios.
9. (+) Prove the addition and subtraction formulas for sine, cosine, and tangent and use them to solve problems.

Mathematics | High School—Modeling

Modeling links classroom mathematics and statistics to everyday life, work, and decision-making. Modeling is the process of choosing and using appropriate mathematics and statistics to analyze empirical situations, to understand them better, and to improve decisions. Quantities and their relationships in physical, economic, public policy, social, and everyday situations can be modeled using mathematical and statistical methods. When making mathematical models, technology is valuable for varying assumptions, exploring consequences, and comparing predictions with data.

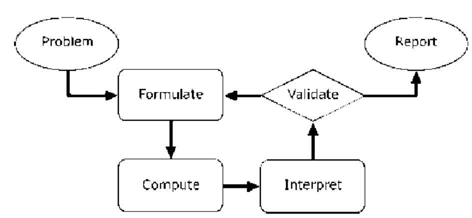
A model can be very simple, such as writing total cost as a product of unit price and number bought, or using a geometric shape to describe a physical object like a coin. Even such simple models involve making choices. It is up to us whether to model a coin as a three-dimensional cylinder, or whether a two-dimensional disk works well enough for our purposes. Other situations—modeling a delivery route, a production schedule, or a comparison of loan amortizations—need more elaborate models that use other tools from the mathematical sciences. Real-world situations are not organized and labeled for analysis; formulating tractable models, representing such models, and analyzing them is appropriately a creative process. Like every such process, this depends on acquired expertise as well as creativity.

Some examples of such situations might include:

- Estimating how much water and food is needed for emergency relief in a devastated city of 3 million people, and how it might be distributed.
- Planning a table tennis tournament for 7 players at a club with 4 tables, where each player plays against each other player.
- Designing the layout of the stalls in a school fair so as to raise as much money as possible.
- Analyzing stopping distance for a car.
- Modeling savings account balance, bacterial colony growth, or investment growth.
- Critical path analysis, e.g., applied to turnaround of an aircraft at an airport.
- Risk situations, such as extreme sports, pandemics, and terrorism.
- Relating population statistics to individual predictions.

In situations like these, the models devised depend 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 that we can create and analyze is also constrained by the limitations of our mathematical, statistical, and technical skills, and our ability to recognize significant variables and relationships among them. Diagrams of various kinds, spreadsheets and other technology, 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 or statistical structure can sometimes model seemingly different situations. Models can also shed light on the mathematical structures themselves, for example, as when a model of bacterial growth makes more vivid the explosive growth of the exponential function.



The basic modeling cycle is summarized in the diagram. It involves (1) identifying variables in the situation and selecting those that represent essential features, (2) formulating a model by creating and selecting geometric, graphical, tabular, algebraic, or statistical representations that describe relationships between the variables, (3) analyzing and performing operations on these relationships to draw conclusions, (4) interpreting the results of the mathematics in terms of the original situation, (5) validating the conclusions by comparing them with the situation, and then either improving the model or, if it is acceptable, (6) reporting on the conclusions and the reasoning behind them. Choices, assumptions, and approximations are present throughout this cycle.

In descriptive modeling, a model simply describes the phenomena or summarizes them in a compact form. Graphs of observations are a familiar descriptive model—for example, graphs of global temperature and atmospheric CO_2 over time.

Analytic modeling seeks to explain data on the basis of deeper theoretical ideas, albeit with parameters that are empirically based; for example, exponential growth of bacterial colonies (until cut-off mechanisms such as pollution or starvation intervene) follows from a constant reproduction rate. Functions are an important tool for analyzing such problems.

Graphing utilities, spreadsheets, computer algebra systems, and dynamic geometry software are powerful tools that can be used to model purely mathematical phenomena (e.g., the behavior of polynomials) as well as physical phenomena.

Modeling Standards

Modeling is best interpreted not as a collection of isolated topics but rather in relation to other standards. Making mathematical models is a Standard for Mathematical Practice, and specific modeling standards appear throughout the high school standards indicated by a star symbol (★).

Mathematics | High School—Geometry

An understanding of the attributes and relationships of geometric objects can be applied in diverse contexts—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.

Although there are many types of geometry, school mathematics is devoted primarily to plane Euclidean geometry, studied both synthetically (without coordinates) and analytically (with coordinates). Euclidean geometry is characterized most importantly by the Parallel Postulate, that through a point not on a given line there is exactly one parallel line. (Spherical geometry, in contrast, has no parallel lines.)

During high school, students begin to formalize their geometry experiences from elementary and middle school, using more precise definitions and developing careful proofs. Later in college some students develop Euclidean and other geometries carefully from a small set of axioms.

The concepts of congruence, similarity, and symmetry can be understood from the perspective of geometric transformation. Fundamental are the rigid motions: translations, rotations, reflections, and combinations of these, all of which are here assumed to preserve distance and angles (and therefore shapes generally). 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.

In the approach taken here, two geometric figures are defined to be congruent if there is a sequence of rigid motions that carries one onto the other. This is the principle of superposition. For triangles, congruence means the equality of all corresponding pairs of sides and all corresponding pairs of angles. During Grade 8, through experiences with geometric constructions and drawing triangles from given conditions, some students notice ways to specify enough measures in a triangle to ensure that all triangles drawn with those measures are congruent. Once these triangle congruence criteria (ASA, SAS, and SSS) are established using rigid motions, they can be used to prove theorems about triangles, quadrilaterals, and other geometric figures.

Similarity transformations (rigid motions followed by dilations) define similarity in the same way that rigid motions define congruence, and lead to the criterion for triangle similarity that two pairs of corresponding angles are congruent.

The definitions of sine, cosine, and tangent for acute angles are founded on right triangles and similarity, and, with the Pythagorean Theorem, are fundamental in many real-world and theoretical situations. The Pythagorean Theorem is generalized to non-right triangles by the Law of Cosines. Together, the Laws of Sines and Cosines embody the triangle congruence criteria for the cases where three pieces of information suffice to completely solve a triangle. Furthermore, these laws yield two possible solutions in the ambiguous case, illustrating that Side-Side-Angle is not a congruence criterion.

Analytic geometry 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. Geometric transformations of the graphs of equations correspond to algebraic changes in their equations.

Dynamic geometry environments provide students with experimental and modeling tools that allow them to investigate geometric phenomena in much the same way as computer algebra systems allow them to experiment with algebraic phenomena.

Connections to Equations. The 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.

Content Overview

Congruence	• Experiment with transformations in the plane • Understand congruence in terms of rigid motions • Prove geometric theorems • Make geometric constructions		1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 6. Attend to precision. 7. Look for and make use of structure. 8. Look for and express regularity in repeated reasoning.	Mathematical Practices
Similarity, Right Triangles, and Trigonometry	• Understand similarity in terms of similarity transformations • Prove theorems involving similarity • Define trigonometric ratios and solve problems involving right triangles • Apply trigonometry to general triangles			
Circles	• Understand and apply theorems about circles • Find arc lengths and areas of sectors of circles			
Expressing Geometric Properties with Equations	• Translate between the geometric description and the equation for a conic section • Use coordinates to prove simple geometric theorems algebraically			
Geometric Measurement and Dimension	• Explain volume formulas and use them to solve problems • Visualize relationships between two-dimensional and three-dimensional objects			
Modeling with Geometry	• Apply geometric concepts in modeling situations			

Congruence G-CO

Experiment with transformations in the plane

1. Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.
2. Represent transformations in the plane using, e.g., transparencies and geometry software; describe transformations as functions that take points in the plane as inputs and give other points as outputs. Compare transformations that preserve distance and angle to those that do not (e.g., translation versus horizontal stretch).
3. Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself.
4. Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.
5. Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another.

Understand congruence in terms of rigid motions

6. Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.
7. Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.
8. Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions.

Prove geometric theorems

9. Prove theorems about lines and angles. *Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.*
10. Prove theorems about triangles. *Theorems include: measures of interior angles of a triangle sum to 180°; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point.*
11. Prove theorems about parallelograms. *Theorems include: opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and conversely, rectangles are parallelograms with congruent diagonals.*

Make geometric constructions

12. Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.). *Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.*
13. Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.

Similarity, Right Triangles, and Trigonometry G-SRT

Understand similarity in terms of similarity transformations

1. Verify experimentally the properties of dilations:
   a. A dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged.
   b. The dilation of a line segment is longer or shorter in the ratio given by the scale factor.
2. Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides.
3. Use the properties of similarity transformations to establish the AA criterion for two triangles to be similar.

Prove theorems involving similarity

4. Prove theorems about triangles using similarity transformations. *Theorems include: a line parallel to one side of a triangle divides the other two proportionally, and conversely; the Pythagorean Theorem proved using triangle similarity.*
5. Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.

Define trigonometric ratios and solve problems involving right triangles

6. Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.
7. Explain and use the relationship between the sine and cosine of complementary angles.
8. Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.★

(+) **Apply trigonometry to general triangles**

9. Derive the formula $A = \frac{1}{2} ab \sin(C)$ for the area of a triangle by drawing an auxiliary line from a vertex perpendicular to the opposite side.
10. Prove the Laws of Sines and Cosines and use them to solve problems.
11. Understand and apply the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles (e.g., surveying problems, resultant forces).

Circles G-C

Understand and apply theorems about circles

1. Prove that all circles are similar.

2. Identify and describe relationships among inscribed angles, radii, and chords. *Include the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.*
3. Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle.
4. (+) Construct a tangent line from a point outside a given circle to the circle.

Find arc lengths and areas of sectors of circles

5. Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.

Expressing Geometric Properties with Equations G-GPE

Translate between the geometric description and the equation for a conic section

1. Derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation.
2. Derive the equation of a parabola given a focus and directrix.
3. (+) Derive the equations of ellipses and hyperbolas given two foci for the ellipse, and two directrices of a hyperbola.

Use coordinates to prove simple geometric theorems algebraically

4. Use coordinates to prove simple geometric theorems algebraically. *For example, prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that the point $(1, \sqrt{3})$ lies on the circle centered at the origin and containing the point $(0, 2)$.*
5. Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).
6. Find the point on a directed line segment between two given points that partitions the segment in a given ratio.
7. Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.★

Geometric Measurement and Dimension G-GMD

Explain volume formulas and use them to solve problems

1. Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone. *Use dissection arguments, Cavalieri's principle, and informal limit arguments.*
2. (+) Give an informal argument using Cavalieri's principle for the formulas for the volume of a sphere and other solid figures.
3. Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.★

Visualize relationships between two-dimensional and three-dimensional objects

4. Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.

Modeling with Geometry G-MG

Apply geometric concepts in modeling situations

1. Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).★
2. Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).★
3. Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).★

Mathematics | High School—Statistics and Probability★

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. Statistics provides tools for describing variability in data and for making informed decisions that take it into account.

Data are gathered, displayed, summarized, examined, and interpreted to discover patterns and deviations from patterns. Quantitative data can be described in terms of key characteristics: measures of shape, center, and spread. The shape of a data distribution might be described as symmetric, skewed, flat, or bell shaped, and it might be summarized by a statistic measuring center (such as mean or median) and a statistic measuring spread (such as standard deviation or interquartile range). Different distributions can be compared numerically using these statistics or compared visually using plots. Knowledge of center and spread are not enough to describe a distribution. Which statistics to compare, which plots to use, 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 alone, and this can be evaluated only under the condition of randomness. The conditions under which data are collected are important in drawing conclusions from the data; in critically reviewing uses of statistics in public media and other reports, it is important to consider the study design, how the data were gathered, and the analyses employed as well as the data summaries and the conclusions drawn.

Random processes can be described mathematically by using a probability model: a list or description of the possible outcomes (the sample space), each of which is assigned a probability. In situations such as flipping a coin, rolling a number cube, or drawing a card, it might be reasonable to assume various outcomes are equally likely. In a probability model, sample points represent outcomes and combine to make up events; probabilities of events can be computed by applying the Addition and Multiplication Rules. Interpreting these probabilities relies on an understanding of independence and conditional probability, which can be approached through the analysis of two-way tables.

Technology plays an important role in statistics and probability by making it possible to generate plots, regression functions, and correlation coefficients, and to simulate many possible outcomes in a short amount of time.

Connections to Functions and Modeling. Functions may be used to describe data; if the data suggest a linear relationship, the relationship can be modeled with a regression line, and its strength and direction can be expressed through a correlation coefficient.

Content Overview

Interpreting Categorical and Quantitative Data	• Summarize, represent, and interpret data on a single count or measurement variable • Summarize, represent, and interpret data on two categorical and quantitative variables • Interpret linear models		1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 6. Attend to precision. 7. Look for and make use of structure. 8. Look for and express regularity in repeated reasoning.	Mathematical Practices
Making Inferences and Justifying Conclusions	• Understand and evaluate random processes underlying statistical experiments • Make inferences and justify conclusions from sample surveys, experiments and observational studies			
Conditional Probability and the Rules of Probability	• Use the concepts of independence and conditional probability to interpret data • Use the rules of probability to compute probabilities of compound events in a uniform probability model			
Using Probability to Make Decisions	• Calculate expected values and use them to solve problems • Use probability to evaluate outcomes of decisions			

Interpreting Categorical and Quantitative Data S-ID

Summarize, represent, and interpret data on a single count or measurement variable

1. Represent data with plots on the real number line (dot plots, histograms, and box plots).
2. Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.
3. Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).
4. Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve.

Summarize, represent, and interpret data on two categorical and quantitative variables

5. Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data.
6. Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.
   a. Fit a function to the data; use functions fitted to data to solve problems in the context of the data. *Use given functions or choose a function suggested by the context. Emphasize linear and exponential models.*
   b. Informally assess the fit of a function by plotting and analyzing residuals.
   c. Fit a linear function for scatter plots that suggest a linear association.

Interpret linear models

7. Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.

8. Compute (using technology) and interpret the correlation coefficient of a linear fit.
9. Distinguish between correlation and causation.

Making Inferences and Justifying Conclusions S-IC

Understand and evaluate random processes underlying statistical experiments

1. Understand that statistics allows inferences to be made about population parameters based on a random sample from that population.
2. Decide if a specified model is consistent with results from a given data-generating process, e.g., using simulation. *For example, a model says a spinning coin falls heads up with probability 0.5. Would a result of 5 tails in a row cause you to question the model?*

Make inferences and justify conclusions from sample surveys, experiments, and observational studies

3. Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each.
4. Use data from a sample survey to estimate a population mean or proportion; develop a margin of error through the use of simulation models for random sampling.
5. Use data from a randomized experiment to compare two treatments; use simulations to decide if differences between parameters are significant.
6. Evaluate reports based on data.

Conditional Probability and the Rules of Probability S-CP

Understand independence and conditional probability and use them to interpret data

1. Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events ("or," "and," "not").
2. Understand that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities, and use this characterization to determine if they are independent.
3. Understand the conditional probability of A given B as P(A and B)/P(B), and interpret independence of A and B as saying that the conditional probability of A given B is the same as the probability of A, and the conditional probability of B given A is the same as the probability of B.
4. Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities. *For example, collect data from a random sample of students in your school on their favorite subject among math, science, and English. Estimate the probability that a randomly selected student from your school will favor science given that the student is in tenth grade. Do the same for other subjects and compare the results.*
5. Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations. *For example, compare the chance of having lung cancer if you are a smoker with the chance of being a smoker if you have lung cancer.*

Use the rules of probability to compute probabilities of compound events in a uniform probability model

6. Find the conditional probability of A given B as the fraction of B's outcomes that also belong to A, and interpret the answer in terms of the model.
7. Apply the Addition Rule, P(A or B) = P(A) + P(B) – P(A and B), and interpret the answer in terms of the model.
8. (+) Apply the general Multiplication Rule in a uniform probability model, P(A and B) = P(A)P(B|A) = P(B)P(A|B), and interpret the answer in terms of the model.
9. (+) Use permutations and combinations to compute probabilities of compound events and solve problems.

(+) Using Probability to Make Decisions S-MD

Calculate expected values and use them to solve problems

1. Define a random variable for a quantity of interest by assigning a numerical value to each event in a sample space; graph the corresponding probability distribution using the same graphical displays as for data distributions.
2. Calculate the expected value of a random variable; interpret it as the mean of the probability distribution.
3. Develop a probability distribution for a random variable defined for a sample space in which theoretical probabilities can be calculated; find the expected value. *For example, find the theoretical probability distribution for the number of correct answers obtained by guessing on all five questions of a multiple-choice test where each question has four choices, and find the expected grade under various grading schemes.*
4. Develop a probability distribution for a random variable defined for a sample space in which probabilities are assigned empirically; find the expected value. *For example, find a current data distribution on the number of TV sets per household in the*

United States, and calculate the expected number of sets per household. How many TV sets would you expect to find in 100 randomly selected households?

Use probability to evaluate outcomes of decisions

5. Weigh the possible outcomes of a decision by assigning probabilities to payoff values and finding expected values.
   a. Find the expected payoff for a game of chance. *For example, find the expected winnings from a state lottery ticket or a game at a fast-food restaurant.*
   b. Evaluate and compare strategies on the basis of expected values. *For example, compare a high-deductible versus a low-deductible automobile insurance policy using various, but reasonable, chances of having a minor or a major accident.*
6. Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator).
7. Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game).

Postscript: A Note on High School Courses

The high school standards in this document do not specify how content should be organized into a sequence of high school courses.

However, it is expected that model course sequences based on these standards will become available in both a traditional sequence (Algebra 1, Geometry, and Algebra 2) as well as an integrated sequence (Integrated 1, Integrated 2, Integrated 3).

Glossary

Addition and subtraction within 5, 10, 20, 100, or 1000. Addition or subtraction of two whole numbers with whole number answers, and with sum or minuend in the range 0-5, 0-10, 0-20, or 0-100, respectively. Example: $8 + 2 = 10$ is an addition within 10, $14 - 5 = 9$ is a subtraction within 20, and $55 - 18 = 37$ is a subtraction within 100.

Additive inverses. Two numbers whose sum is 0 are additive inverses of one another. Example: $3/4$ and $-3/4$ are additive inverses of one another because $3/4 + (-3/4) = (-3/4) + 3/4 = 0$.

Associative property of addition. See Table 3 in this Glossary.

Associative property of multiplication. See Table 3 in this Glossary.

Bivariate data. Pairs of linked numerical observations. Example: a list of heights and weights for each player on a football team.

Box plot. A method of visually displaying a distribution of data values by using the median, quartiles, and extremes of the data set. A box shows the middle 50% of the data.[1]

Commutative property. See Table 3 in this Glossary.

Complex fraction. A fraction A/B where A and/or B are fractions (B nonzero).

Computation algorithm. A set of predefined steps applicable to a class of problems that gives the correct result in every case when the steps are carried out correctly. See also: *computation strategy*.

Computation strategy. Purposeful manipulations that may be chosen for specific problems, may not have a fixed order, and may be aimed at converting one problem into another. See also: *computation algorithm*.

Congruent. Two plane or solid figures are congruent if one can be obtained from the other by rigid motion (a sequence of rotations, reflections, and translations).

Counting on. A strategy for finding the number of objects in a group without having to count every member of the group. For example, if a stack of books is known to have 8 books and 3 more books are added to the top, it is not necessary to count the stack all over again; one can find the total by *counting on*—pointing to the top book and saying "eight," following this with "nine, ten, eleven. There are eleven books now."

Dot plot. *See line plot.*

Dilation. A transformation that moves each point along the ray through the point emanating from a fixed center, and multiplies distances from the center by a common scale factor.

Expanded form. A multidigit number is expressed in expanded form when it is written as a sum of single-digit multiples of powers of ten. For example, $643 = 600 + 40 + 3$.

Expected value. For a random variable, the weighted average of its possible values, with weights given by their respective probabilities.

First quartile. For a data set with median M, the first quartile is the median of the data values less than M. Example: For the data set {1, 3, 6, 7, 10, 12, 14, 15, 22, 120}, the first quartile is 6.[2] *See also* median, third quartile, interquartile range.

Fraction. A number expressible in the form a/b where a is a whole number and b is a positive whole number. (The word *fraction* in these standards always refers to a nonnegative number.) *See also* rational number.

Identity property of 0. See Table 3 in this Glossary.

Independently combined probability models. Two probability models are said to be combined independently if the probability of each ordered pair in the combined model equals the product of the original probabilities of the two individual outcomes in the ordered pair.

Integer. A number expressible in the form a or $-a$ for some whole number a.

Interquartile Range. A measure of variation in a set of numerical data, the interquartile range is the distance between the first and third quartiles of the data set. Example: For the data set {1, 3, 6, 7, 10, 12, 14, 15, 22, 120}, the interquartile range is $15 - 6 = 9$. *See also* first quartile, third quartile.

Line plot. A method of visually displaying a distribution of data values where each data value is shown as a dot or mark above a number line. Also known as a dot plot.[3]

Mean. A measure of center in a set of numerical data, computed by adding the values in a list and then dividing by the number of values in the list.[4] Example: For the data set {1, 3, 6, 7, 10, 12, 14, 15, 22, 120}, the mean is 21.

Mean absolute deviation. A measure of variation in a set of numerical data, computed by adding the distances between each data value and the mean, then dividing by the number of data values. Example: For the data set {2, 3, 6, 7, 10, 12, 14, 15, 22, 120}, the mean absolute deviation is 20.

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[1] Adapted from Wisconsin Department of Public Instruction, http://dpi.wi.gov/standards/mathglos.html, accessed March 2, 2010.
[2] Many different methods for computing quartiles are in use. The method defined here is sometimes called the Moore and McCabe method. See Langford, E., "Quartiles in Elementary Statistics," *Journal of Statistics Education* Volume 14, Number 3 (2006),
[3] Adapted from Wisconsin Department of Public Instruction, *op. cit.*
[4] To be more precise, this defines the *arithmetic mean*.

Median. A measure of center in a set of numerical data. The median of a list of values is the value appearing at the center of a sorted version of the list—or the mean of the two central values, if the list contains an even number of values. Example: For the data set $\{2, 3, 6, 7, 10, 12, 14, 15, 22, 90\}$, the median is 11.

Midline. In the graph of a trigonometric function, the horizontal line half-way between its maximum and minimum values.

Multiplication and division within 100. Multiplication or division of two whole numbers with whole number answers, and with product or dividend in the range 0-100. Example: $72 \div 8 = 9$.

Multiplicative inverses. Two numbers whose product is 1 are multiplicative inverses of one another. Example: $3/4$ and $4/3$ are multiplicative inverses of one another because $3/4 \times 4/3 = 4/3 \times 3/4 = 1$.

Number line diagram. A diagram of the number line used to represent numbers and support reasoning about them. In a number line diagram for measurement quantities, the interval from 0 to 1 on the diagram represents the unit of measure for the quantity.

Percent rate of change. A rate of change expressed as a percent. Example: if a population grows from 50 to 55 in a year, it grows by $5/50 = 10\%$ per year.

Probability distribution. The set of possible values of a random variable with a probability assigned to each.

Properties of operations. See Table 3 in this Glossary.

Properties of equality. See Table 4 in this Glossary.

Properties of inequality. See Table 5 in this Glossary.

Properties of operations. See Table 3 in this Glossary.

Probability. A number between 0 and 1 used to quantify likelihood for processes that have uncertain outcomes (such as tossing a coin, selecting a person at random from a group of people, tossing a ball at a target, testing for a medical condition).

Probability model. A probability model is used to assign probabilities to outcomes of a chance process by examining the nature of the process. The set of all outcomes is called the sample space, and their probabilities sum to 1. See also *uniform probability model*.

Random variable. An assignment of a numerical value to each outcome in a sample space.

Rational expression. A quotient of two polynomials with non-zero denomiator.

Rational number. A number expressible in the form a/b or $-a/b$ for some fraction a/b. The rational numbers include the integers.

Rectilinear figure. A polygon all angles of which are right angles.

Rigid motion. A transformation of points in space consisting of a sequence of one or more translations, reflections, and/or rotations. Rigid motions are here assumed to preserve distances and angle measures.

Repeating decimal. The decimal form of a rational number. See *terminating decimal*.

Sample space. In a probability model for a random process, a list of the individual outcomes that are to be considered.

Scatter plot. A graph in the coordinate plane representing a set of bivariate data. For example, the heights and weights of a group of people could be displayed on a scatter plot.[5]

Similarity transformation. A rigid motion followed by a dilation.

Tape diagram. A drawing that looks like a segment of tape, used to illustrate number relationships. Also known as a strip diagram, bar model, fraction strip, or length model.

Terminating decimal. A decimal is called terminating if its repeating digit is 0.

Third quartile. For a data set with median M, the third quartile is the median of the data values greater than M. Example: For the data set $\{2, 3, 6, 7, 10, 12, 14, 15, 22, 120\}$, the third quartile is 15. *See also* median, first quartile, interquartile range.

Transitivity principle for indirect measurement. If the length of object A is greater than the length of object B, and the length of object B is greater than the length of object C, then the length of object A is greater than the length of object C. This principle applies to measurement of other quantities as well.

Uniform probability model. A probability model which assigns equal probability to all outcomes. See also *probability model.*

Vector. A quantity with magnitude and direction in the plane or in space, defined by an ordered pair or triple of real numbers.

Visual fraction model. A tape diagram, number line diagram, or area model.

Whole numbers. The numbers 0, 1, 2, 3, ….

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[5] Adapted from Wisconsin Department of Public Instruction, *op. cit*.

TABLE 1. Common addition and subtraction situations.[6]

	Result Unknown	Change Unknown	Start Unknown
Add to	Two bunnies sat on the grass. Three more bunnies hopped there. How many bunnies are on the grass now? 2 + 3 = ?	Two bunnies were sitting on the grass. Some more bunnies hopped there. Then there were five bunnies. How many bunnies hopped over to the first two? 2 + ? = 5	Some bunnies were sitting on the grass. Three more bunnies hopped there. Then there were five bunnies. How many bunnies were on the grass before? ? + 3 = 5
Take from	Five apples were on the table. I ate two apples. How many apples are on the table now? 5 2 = ?	Five apples were on the table. I ate some apples. Then there were three apples. How many apples did I eat? 5 ? = 3	Some apples were on the table. I ate two apples. Then there were three apples. How many apples were on the table before? ? 2 = 3

	Total Unknown	Addend Unknown	Both Addends Unknown[7]
Put Together/ Take Apart[8]	Three red apples and two green apples are on the table. How many apples are on the table? 3 + 2 = ?	Five apples are on the table. Three are red and the rest are green. How many apples are green? 3 + ? = 5, 5 3 = ?	Grandma has five flowers. How many can she put in her red vase and how many in her blue vase? 5 = 0 + 5, 5 = 5 + 0 5 = 1 + 4, 5 = 4 + 1 5 = 2 + 3, 5 = 3 + 2

	Difference Unknown	Bigger Unknown	Smaller Unknown
Compare[9]	("How many more?" version): Lucy has two apples. Julie has five apples. How many more apples does Julie have than Lucy? ("How many fewer?" version): Lucy has two apples. Julie has five apples. How many fewer apples does Lucy have than Julie? 2 + ? = 5, 5 2 = ?	(Version with "more"): Julie has three more apples than Lucy. Lucy has two apples. How many apples does Julie have? (Version with "fewer"): Lucy has 3 fewer apples than Julie. Lucy has two apples. How many apples does Julie have? 2 + 3 = ?, 3 + 2 = ?	(Version with "more"): Julie has three more apples than Lucy. Julie has five apples. How many apples does Lucy have? (Version with "fewer"): Lucy has 3 fewer apples than Julie. Julie has five apples. How many apples does Lucy have? 5 3 = ?, ? + 3 = 5

[6] Adapted from Box 2-4 of National Research Council (2009, op. cit., pp. 32, 33).
[7] These *take apart* situations can be used to show all the decompositions of a given number. The associated equations, which have the total on the left of the equal sign, help children understand that the = sign does not always mean *makes* or *results in* but always does mean *is the same number as*.
[8] Either addend can be unknown, so there are three variations of these problem situations. Both Addends Unknown is a productive extension of this basic situation especially for small numbers less than or equal to 10.
[9] For the Bigger Unknown or Smaller Unknown situations, one version directs the correct operation (the version using *more* for the bigger unknown and using *less* for the smaller unknown). The other versions are more difficult.

TABLE 2. Common multiplication and division situations.[10]

	Unknown Product	Group Size Unknown ("How many in each group?" Division)	Number of Groups Unknown ("How many groups?" Division)
	$3 \times 6 = ?$	$3 \times ? = 18$ and $18 \div 3 = ?$	$? \times 6 = 18$ and $18 \div 6 = ?$
Equal Groups	There are 3 bags with 6 plums in each bag. How many plums are there in all? *Measurement example*. You need 3 lengths of string, each 6 inches long. How much string will you need altogether?	If 18 plums are shared equally into 3 bags, then how many plums will be in each bag? *Measurement example*. You have 18 inches of string, which you will cut into 3 equal pieces. How long will each piece of string be?	If 18 plums are to be packed 6 to a bag, then how many bags are needed? *Measurement example*. You have 18 inches of string, which you will cut into pieces that are 6 inches long. How many pieces of string will you have?
Arrays,[11] Area[12]	There are 3 rows of apples with 6 apples in each row. How many apples are there? *Area example*. What is the area of a 3 cm by 6 cm rectangle?	If 18 apples are arranged into 3 equal rows, how many apples will be in each row? *Area example*. A rectangle has area 18 square centimeters. If one side is 3 cm long, how long is a side next to it?	If 18 apples are arranged into equal rows of 6 apples, how many rows will there be? *Area example*. A rectangle has area 18 square centimeters. If one side is 6 cm long, how long is a side next to it?
Compare	A blue hat costs \$6. A red hat costs 3 times as much as the blue hat. How much does the red hat cost? *Measurement example*. A rubber band is 6 cm long. How long will the rubber band be when it is stretched to be 3 times as long?	A red hat costs \$18 and that is 3 times as much as a blue hat costs. How much does a blue hat cost? *Measurement example*. A rubber band is stretched to be 18 cm long and that is 3 times as long as it was at first. How long was the rubber band at first?	A red hat costs \$18 and a blue hat costs \$6. How many times as much does the red hat cost as the blue hat? *Measurement example*. A rubber band was 6 cm long at first. Now it is stretched to be 18 cm long. How many times as long is the rubber band now as it was at first?
General	$a \times b = ?$	$a \times ? = p$ and $p \div a = ?$	$? \times b = p$ and $p \div b = ?$

[10] The first examples in each cell are examples of discrete things. These are easier for students and should be given before the measurement examples.
[11] The language in the array examples shows the easiest form of array problems. A harder form is to use the terms rows and columns: The apples in the grocery window are in 3 rows and 6 columns. How many apples are in there? Both forms are valuable.
[12] Area involves arrays of squares that have been pushed together so that there are no gaps or overlaps, so array problems include these especially important measurement situations.

TABLE 3. The properties of operations. Here a, b and c stand for arbitrary numbers in a given number system. The properties of operations apply to the rational number system, the real number system, and the complex number system.

Associative property of addition	$(a + b) + c = a + (b + c)$
Commutative property of addition	$a + b = b + a$
Additive identity property of 0	$a + 0 = 0 + a = a$
Existence of additive inverses	For every a there exists $-a$ so that $a + (-a) = (-a) + a = 0$.
Associative property of multiplication	$(a \times b) \times c = a \times (b \times c)$
Commutative property of multiplication	$a \times b = b \times a$
Multiplicative identity property of 1	$a \times 1 = 1 \times a = a$
Existence of multiplicative inverses	For every $a \neq 0$ there exists $1/a$ so that $a \times 1/a = 1/a \times a = 1$.
Distributive property of multiplication over addition	$a \times (b + c) = a \times b + a \times c$

TABLE 4. The properties of equality. Here a, b and c stand for arbitrary numbers in the rational, real, or complex number systems.

Reflexive property of equality	$a = a$
Symmetric property of equality	If $a = b$, then $b = a$.
Transitive property of equality	If $a = b$ and $b = c$, then $a = c$.
Addition property of equality	If $a = b$, then $a + c = b + c$.
Subtraction property of equality	If $a = b$, then $a - c = b - c$.
Multiplication property of equality	If $a = b$, then $a \times c = b \times c$.
Division property of equality	If $a = b$ and $c \neq 0$, then $a \div c = b \div c$.
Substitution property of equality	If $a = b$, then b may be substituted for a in any expression containing a.

TABLE 5. The properties of inequality. Here a, b and c stand for arbitrary numbers in the rational or real number systems.

Exactly one of the following is true: $a < b$, $a = b$, $a > b$.
If $a > b$ and $b > c$ then $a > c$.
If $a > b$, then $b < a$.
If $a > b$, then $-a < -b$.
If $a > b$, then $a \pm c > b \pm c$.
If $a > b$ and $c > 0$, then $a \times c > b \times c$.
If $a > b$ and $c < 0$, then $a \times c < b \times c$.
If $a > b$ and $c > 0$, then $a \div c > b \div c$.
If $a > b$ and $c < 0$, then $a \div c < b \div c$.

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B1-5: FLORIDA'S STANDARDS ADOPTION PROCESS AND TIMELINE - DECEMBER 2009

COMMON CORE AND NEXT GENERATION SUNSHINE STATE STANDARDS

	CURRICULUM ALIGNMENT			INSTRUCTIONAL MATERIALS				PROFESSIONAL DEVELOPMENT				ASSESSMENT			TEACHER CERTIFICATION	
Subject Area	**Public Input for Draft Standards**	**State Board of Education approved**	**Adopt course descriptions**	**Vendor Instructional Materials Alignment**	**State Instructional Materials Adoption Process**	**Contract years for Instructional Materials – District Purchase**	**Classroom implementation of aligned Instructional Materials**	**Develop research-based practices for new standards**	**Lead trainers**	**Teacher training**	**Full implementation of new standards**	**Assessment realignment started**	**Field test**	**New generation of tests first given**	**Educator Preparation Programs**	**Florida Teacher Certification Exam**
Science	October 2007	**February 2008**	June 2008	2009-2010	2010-11 2011-	17	**2011-12**	2008-10 20	08-11	2008-12	**2011-12**	October 2007	April **(EOC: May)** 2011	April **(EOC: May)** 2012	2008-09	Fall 2009
Social Studies	June 2008	**December 2008**	February 2009	2010-2011	2011-12 2012-	18	**2012-13**	2009-10 20	10-12	2011-13	**2013-13**	October 2009	May 2012	May 2013	2008-09	Fall 2009
Physical Education	June 2008	**December 2008**	February 2009	2010-2011	2011-12 2012-	18	**2012-13**	2008-10 20	08-10	2009-11	**2012-13**				2009-10	Fall 2011
Health	June 2008	**December 2008**	February 2009	2010-2011	2011-12 2012-	18	**2012-13**	2009-12 20	09-12	2010-13	**2012-13**				2009-10	Fall 2011
World Languages	January 2010	**March 2010**	June 2010	2011-2012	2012-13 2013-	19	**2013-14**	2010-13 20	10-13	2011-13	**2013-14**				2009-10	Fall 2011
Visual Arts	June 2010	**October 2010**	February 2011	2012-2013	2013-14	2014-20	**2014-15**	2011-14	2011-14	2012-14	**2014-15**				2009-10	Fall 2011
Performing Arts	June 2010	**October 2010**	February 2011	2012-2013	2013-14 2014-	20	**2014-15**	2011-14 20	11-14	2012-14	**2014-15**				2014-15	Fall 2016
Common Core Language Arts	**Feb - May 2010**	**July 2010**	**January 2011**	**2007-2008**	**2008-09**	**2009-15**	**2009-10**	**2010-13**	**2010-13**	**2011-13**	**2012-13**	**Writing 2011 Reading 2013**	**Writing 2012 Reading 2014**	**Writing 2013 Reading 2015**	**2012-13**	**Fall 2013**
Common Core Mathematics	**Feb – May 2010**	**July 2010**	**January 2011**	**2010-11**	**2010-11**	**2010-16**	**2010-11**	**2010-2011**	**201-12**	**2012-14**	**2013**	**2013**	**May 2014**	**May 2015**	**2012-13**	**Fall 2013**

Due to the lack of research-based World Language Standards nationally, Florida is proposing the adoption of the Common European Framework for World Languages. This work has begun and is scheduled to be completed in March 2010.

DRAFT

PARTNERSHIP FOR ASSESSMENT OF READINESS FOR COLLEGE AND CAREERS
MEMORANDUM OF UNDERSTANDING

Purpose. This document commits states to participate in the Partnership for Assessment of Readiness for College and Career, a state-led consortium that will collaborate on the development of common, high-quality assessments aligned to the Common Core State Standards (CCSS) in English language arts and mathematics for grades 3-8 and high school. The primary goal of the Partnership's work is to measure and document students' college and career readiness against common academic standards and to measure students' progress toward this target throughout the rest of the system.

While participating in the Partnership demonstrates the state's commitment to pursue a common assessment system that enables comparisons against the CCSS across all Partnership states, it does not commit the state to a specific assessment design at this point. Partnership states are still considering several options for the design of a common assessment system in pursuit of the Race to the Top (RTTT) Comprehensive Assessments Grant and will not be asked to commit to the Partnership's application until a later date. Until that time, all participating states will have the opportunity to contribute to and shape the Partnership's proposal.

Preliminary Design Principles. Partnership states have identified the following major purposes and uses for the assessment system. As the Partnership collaborates to develop its application for the RTTT assessment competition, these purposes will guide its work.

- The primary purpose is to measure and document students' **college and career readiness** and to measure students' progress toward this target throughout the rest of the system. Students meeting the college and career readiness standards will be eligible for placement into entry-level credit-bearing, rather than remedial, courses in public 2- and 4-year postsecondary institutions in participating states.

- Additionally, the partnership is committed to ensuring that the assessment results:
    - Are **comparable across states** at the student level;
    - Meet **internationally rigorous benchmarks**;
    - Support valid assessment of **student longitudinal growth**; and
    - Serve as a **signal for good instructional practices**.

- The results must be able to support multiple levels and forms of accountability including:
    - Decisions about **promotion and graduation for individual students**,
    - **Teacher and leader evaluations**, and
    - **School accountability** determinations.

Roles and Responsibilities of Partnership States. The Partnership will employ a multi-level governance and management structure designed to guide the partnership through the submission of the proposal.

- The **Governing States** are comprised of a representative group of leaders from Partnership states that are committed to implementing the assessment system developed by the partnership, should it win a grant from the Race to the Top Comprehensive Assessment System competition, and are responsible for guiding the proposal development process. Each Governing State will commit a team comprised of the chief, assessment director, and other key officials from the State Education Agency, Governor's office, and higher education as appropriate.
- The **Proposal Design Team** will include officials from partnership states who will work with an advisory group of national and international experts to create an assessment system design for the Partnership's proposal. The design team will include as many states as are interested in and capable of contributing to and shaping the design of the proposed next generation assessment system.

- **Participating States** will include other partnership states that are unable to provide staff time to the design team but will provide rapid feedback on drafts of the proposal through the development phase.

State Commitment. This memorandum of understanding is voluntary and non-binding for states. States signing this MOU should do so with the intent of continuing in the Partnership through the proposal development, assessment development, and implementation phases. However, there will be an opportunity for states to re-assess their participation in the Partnership before it submits its application for a Race to the Top Comprehensive Assessment Systems Grant by June 23, 2010.

Agreement. The undersigned state leader agrees to the process and structure as described above and attests accordingly by his/her signature below.

Signature(s) for the State of: Florida	
Authorized State Signature:	
Name: Dr. Eric J. Smith	Date: May 7, 2010
Title: Commissioner of Education	

PARTNERSHIP FOR ASSESSMENT OF READINESS FOR COLLEGE AND CAREERS
PARTICIPATING STATES
MAY 25, 2010

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1. Alabama
2. Arizona
3. Arkansas
4. California
5. Colorado
6. Delaware
7. District of Columbia
8. Florida
9. Georgia
10. Hawaii
11. Illinois
12. Indiana
13. Kentucky
14. Louisiana
15. Maryland
16. Massachusetts
17. Mississippi
18. New Hampshire
19. New Jersey
20. New York
21. North Dakota
22. Ohio
23. Oklahoma
24. Pennsylvania
25. Rhode Island
26. South Carolina
27. Tennessee

FCR STEM

Florida Center for Research in
Science, Technology, Engineering and Mathematics

Learning Systems Institute, Florida State University

What is FCR-STEM?

The Florida Center for Research in Science, Technology, Engineering and Mathematics (FCR-STEM) is a multi-disciplinary research center created by the Florida Legislature in 2007. Our mission is to help the State of Florida improve teaching and learning in K-12 science, technology, engineering, and math and prepare students for higher education and STEM careers in the 21st century. Located at the Florida State University, FCR-STEM is jointly administered by the College of Arts & Sciences, the College of Education and the Learning Systems Institute.

STEM stands for:
Science
Technology
Engineering and
Mathematics

Impact felt across Florida

After just three years, FCR-STEM has generated significant results:

- 550 principals and teachers statewide received professional development — with more training scheduled
- More than 2 million people visited CPALMS online professional support system
- More than 850 resources were made available on GEOSET, a global network of online STEM materials
- 230 undergraduates took classes in FSU's new program for future math and science teachers
- 930 educators from all Florida school districts were trained in new state standards
- Original research demonstrated successful STEM curricula and methods
- More than 75 publications and presentations spread news of our work nationwide

FCR-STEM remains vital to the economic and educational future of Florida

In Florida, 15 of the 20 fastest growing jobs through 2014 will require considerable math and science preparation, according to an Enterprise Florida report. But while the economy calls for a more proficient STEM workforce, enrollment and success in those fields is declining. Most school districts in Florida are facing tough challenges in teaching science and mathematics, as illustrated by these 2009 statistics:

- More than half of students performed below grade level in science, including 54 percent of fifth-graders, 59 percent of eighth-graders, and 63 percent of eleventh-graders.
- More than two-thirds of the districts in Florida had fewer than 68 percent of their grade 3-10 student population performing on grade level and above in math.

(b)(6)

Student in an FCR-STEM study that showed how teaching literacy alongside science can benefit learning in both.

Entrusted with state, federal and private support

The Florida Legislature provided $5.3 million to FCR-STEM during its first three years, funding that the center leveraged to attract an additional $9.2 million in federal and private support. Although budget cuts forced legislators to curtail state funding to FCR-STEM in 2009, the center has continued to operate using its other resources. When core funding is resumed, FCR-STEM will be able to leverage that support to attract higher levels of external contract and grant support.

Rigorous research, professional development and technical assistance

As part of its three-prong mission, FCR-STEM:

- Conducts research using rigorous methods on how math and science learning can be improved
- Provides professional development for principals and teachers to use the results of new research
- Creates award-winning online teaching tools, networks and portals that are easy to use and save schools time and money
- Builds a powerful state-wide standards and information system that includes a course-code directory
- Prepares the next generation of science and math teachers
- Develops a formative assessment system for early elementary mathematics
- Designs a plan to increase participation and achievement of females and minorities in STEM
- Coordinates development of a collaborative, business-driven plan to improve STEM performance for all Floridians

> *"The purpose of the center is increasing student achievement in mathematics and science, with an emphasis on K-12 education."*
>
> — Chapter 1004.86
> Florida Statutes

FCR-STEM benefits Florida students, educators, businesses and taxpayers

When STEM subjects are taught well, everyone wins. Work done or supported by FCR-STEM

- Prepares tomorrow's workforce for in-demand knowledge and skills
- Keeps Florida businesses competitive with well-trained employees
- Provides powerful tools for teachers
- Develops methods for more relevant, competent and individualized instruction
- Encourages and trains new science and math teachers
- Offers professional development opportunities to experienced teachers
- Engages leaders of business, education and policy in productive collaboration
- Saves tax dollars with efficient use of online resources by teachers
- Attracts millions of dollars in federal and private research funding to the state
- Enhances Florida's reputation as a STEM innovator

(b)(6)

FSU-Teach is an undergraduate program that prepares high-quality middle and high school science and math teachers. Students graduate with two majors, one in teaching, the second in science or math. FCR-STEM core funding helped launch FSU-Teach, which emphasizes deep knowledge of both content and teaching, rigorous recruitment of high-quality teaching candidates, and early experience in classroom teaching. Above, a student-teacher works in a science class.

Expert leadership, guidance and partnerships

Experts from a variety of fields serve as leaders, administrators, advisors and partners in the center's efforts to improve STEM education. In addition, a diverse executive committee, advisory board and team of partners work to advance the center's mission.

Director

Harold Kroto, Ph.D., Nobel laureate (1996, chemistry) and Francis Eppes Professor of Chemistry and Biochemistry at FSU

Executive Committee

- Laura Lang, Ph.D., Director of the Learning Systems Institute, Associate Professor of Educational Leadership and Policy Studies at FSU's College of Education
- Joseph Travis, Ph.D., Dean of FSU's College of Arts & Sciences
- Marcy Driscoll, Ph.D., Dean of FSU's College of Education
- Larry Abele, Ph.D., FSU Provost and Vice President of Academic Affairs

Advisory Board

Made up of more than 45 stakeholders and professionals, including

- National and international researchers in science and math learning and teaching
- Science and mathematics educators
- Parents of preK-12 students in Florida public schools
- District school superintendents and other educational leaders in Florida
- Industry leaders in Florida who hire people in STEM-related fields
- Leaders in STEM career development

Select Partners

- Florida Association of Mathematics Supervisors
- Florida Association of Science Supervisors
- Florida Chamber of Commerce
- Florida Council of Teachers of Mathematics
- Florida Department of Education
- Harris Corp.
- Helios Foundation
- Lockheed Martin
- Workforce Florida, Inc.
- School districts and institutes of higher education

Online system aligns standards

CPALMS is a free, web-based system built by FCR-STEM in collaboration with educators to help Florida teachers, students, administrators, parents and others achieve their education goals. It provides relevant, reliable tools that make information, such as Florida's Next Generation Sunshine State Standards and Course-Code Directory, easily accessible. Course-request, resource development and alignment tools are standards-driven and paired with peer- and expert-review processes that facilitate professional development and collaboration. Serving more than 5,000 people a day, CPALMS has received worldwide attention for its innovative approaches.

Professional development in high demand

Leadership for Mathematics and Science Instruction (LMSI) is a one-year professional development program focusing on math and science content for school teams of principals and teacher leaders. To date some 350 educators from more than 48 school districts have participated, with more than 1,000 signed up or on a waiting list. Responses like this one, from Principal Holly Bell of Lee County's Orange River Elementary School, have been typical "Coming here has really changed my whole career. In 39 years I have never learned so much as I have from this training, and how important it is to know those things."

(b)(6)

Principals and teachers learn new skills at an LMSI workshop.

First-rate resources and experience

As one of several research centers operated by FSU's **Learning Systems Institute** (LSI), FCR-STEM benefits from a team of contract and grants specialists, experts in myriad areas of education and other institutional resources. A widely respected research and development organization with a 40-year history of improving education and human performance, LSI counts among its centers the Florida Center for Reading Research, known globally for its work in literacy. LSI serves a wide range of clients, including the **National Science Foundation**, the U.S. Department of Education's Institute of Education Sciences, the military, law enforcement, public schools and private companies. LSI has $9.6 million from the **Florida Department and Education** and $19 million from the **U.S. Department of Education** in current grants alone. Over the years, the institute has built strong partnerships with a long list of educational institutions and research centers.

(b)(6)

LSI is conducting a development project for USAID aimed at improving education in Indonesia.

LSI also has **deep international experience**, with past or current projects in South Korea, Haiti, Ghana, Peru, Indonesia and other countries. Over the last five years, LSI received 183 contracts and grants worth more than $76 million: After the National High Magnetic Field Laboratory, it is the **largest contributor to contracts and grant funding at FSU.** What's more, with every dollar the state invested, LSI attracted six more in outside funding.

Research builds foundation for action

Research is a key component of FCR-STEM's mission, pointing the way to better teaching of STEM subjects. **Our research focuses on cause and effect:** What teaching methods deliver the best results? Among other topics, center faculty have studied:

- Effectiveness of an interdisciplinary approach to teaching math, science and technology in middle school.
- Effectiveness of job-embedded professional development, specifically learning communities, as a strategy to build principals' capacity to support teachers' adoption of reform-oriented instruction.
- Effectiveness of a reform-oriented science curriculum and related professional development in improving elementary level instruction and learning.
- Development and testing of a grade 2 curriculum differentiating science instruction based on students' vocabulary and background knowledge.
- Higher-order thinking and cognitive mechanisms that differentiate high- and low-performing students in Advanced Placement science courses.
- How principals can best support student achievement in mathematics and science by increasing their own knowledge.

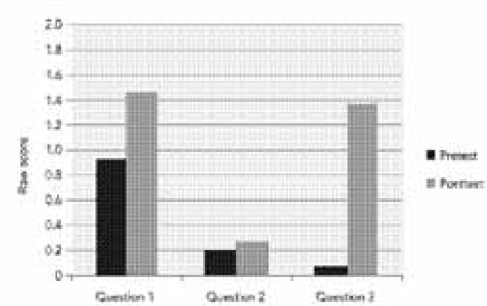

Chart from Prof. Carol Connor's article in* The Reading Teacher *illustrates how second graders who completed specialized units made significant gains in literacy and science learning.

Call us: (850) 644-2570 Visit us: www.fcrstem.org Email us: fcrstem@lsi.fsu.edu

Write us: FCR-STEM, 4600C University Center, Florida State University, Tallahassee, FL 32306-2540 USA

Florida Center for Research in
Science, Technology, Engineering and Mathematics

Learning Systems Institute, Florida State University

Select FCR-STEM Projects at a Glance

Online system aligns standards for educators, saving time and money

CPALMS Performance Support System (www.floridastandards.org)
To teach Florida's Next Generation Sunshine State Standards, educators need easy access to reliable information and high-quality resources. CPALMS, a web-based system developed in collaboration with Florida's teachers, meets those needs. Teachers, parents, and administrators can find content standards for each grade level and course. Tools for lesson-planning and resource alignment are standards-driven and paired with a peer- and expert-review process. CPALMS also provides the state course-code directory and a course-request tool that expedites review and approval of new courses within 90 days as required by state law. This innovative system serves more than 5,000 people a day worldwide.

A statewide roadmap for STEM education, policy-making and economic growth

STEM*florida* (www.stemflorida.net)
Workforce Florida, Inc., chose FCR-STEM, in partnership with other groups, to lead the creation of a statewide plan to support quality STEM development in the state. Dubbed STEM*florida*, the organization's goal is to make Florida a national leader in market-relevant STEM talent development and retention. As part of this effort, FCR-STEM has established an education advisory group that includes representatives from businesses, government, universities, K-12 educators and other organizations to produce a Florida STEM plan. Due out in December 2010, this plan will synthesize the statewide input from both the business and education communities.

Helping educators keep pace with changing standards

Professional Development for Principals and Teachers
FCR-STEM designs and provides professional development for teachers and school leaders across Florida as part of a math and science partnership of universities and school districts. This work currently involves:

Leadership for Mathematics and Science Instruction (www.lsi.fsu.edu/lmsi) is a one-year professional development program focusing on math and science content from the Next Generation Sunshine State Standards for school teams of principals and teacher leaders. To date some 350 principals and teachers from 48 school districts have participated, with hundreds more signed up. A randomized-controlled trial will study the program's impact.
Two-week summer institutes for K-12 teachers (www.flpromise.org) focus on deepening content-specific knowledge and skills related to Florida's mathematics and science standards. Conducted in partnership with the Florida State University, the University of Florida, the University of South Florida and Florida International University, workshops are led by a team consisting of classroom teachers and an arts and sciences faculty member.

Giving teachers tools to tailor individualized, relevant instruction

Mathematics Formative Assessment
FCR-STEM is developing a formative assessment system for early elementary math. Funded by the Florida Department of Education, it will provide teachers with tools and information to assess the progress of each student, allowing them to individualize instruction and provide additional support to improve learning. Teachers will have easy access to these assessments through CPALMS online tools. A **randomized-controlled trial will study the success of the system.**

High-performing students shed light on better learning for all

Examining Superior Performance in Advanced Placement Courses
With a focus on explaining superior performance in AP courses, this research examines the critical thinking skills of high- and low-performing students, contrasting the differences between these groups. The findings will increase our understanding of how best to improve student learning and performance, science and related fields.

Hands-on curriculum paired with professional development leads to better learning

Great Explorations in Math and Science (GEMS)

This study tested the effectiveness of the GEMS space science curriculum and related professional development in improving teachers' instruction and students' science learning in 130 elementary school classrooms. The curriculum is aligned with Florida's new science standards and the qualities of science teaching recommended by the National Research Council. The study demonstrated that students in the GEMS classrooms scored significantly higher on content knowledge and positive attitude toward science than those given traditional instruction. The findings will build state and district capacity to reform science teaching in ways that are aligned with Florida's new standards.

Equipping new science and math teachers with knowledge, skills and experience

FSU-Teach (www.fsu-teach.fsu.edu)

FSU-Teach is an undergraduate teacher preparation program, operated by the colleges of Arts & Sciences and Education, designed to increase the number and retention of high-quality science and mathematics teachers in grades 6 to 12. Students in this four-year program graduate with two majors, one in teaching the other in science or math. FCR-STEM core funding from the Florida Legislature, combined with assistance from private grants, helped launch FSU-Teach. Its innovative approach emphasizes deep knowledge of both content and teaching and early experience in classroom teaching. **Just two years in, the program has already attracted some 230 students.**

Paving the way for females and minorities to succeed in STEM courses and fields

Female-Minority Initiative (www.lsi.fsu.edu/femaleminority)

FCR-STEM brought together a group of experts representing school districts, community colleges, universities, business, workforce development and STEM initiatives outside Florida to examine policies, programs and strategies that hold promise for increasing Florida's female and minority representation in STEM courses and fields. The group developed a comprehensive plan, released in February 2009, to increase the number and percentage of females and minority students enrolling in and successfully completing math and science courses. The report also made recommendations for increasing female and minority participation, achievement and persistence in STEM education and careers from kindergarten through college.

Teaming literacy with science to help students succeed

Individualizing Student Instruction in Science

This research project developed and tested second grade science units that integrated science and reading comprehension instruction. The units allowed teachers to tailor science instruction to each student's reading, science knowledge and vocabulary skills. After completing these specialized units, children made significant gains in literacy and science learning. Plus, children with weaker science and literacy skills made the same gains, on average, as did children with stronger skills.

Comparing innovative teaching approaches to business as usual

Integrated Math, Science and Technology (IMaST)

This study investigates the effectiveness of an interdisciplinary approach to teaching math, science and technology in the middle grades. The approach is based on a curriculum (IMaST) created by the Center for Mathematics, Science and Technology that emphasizes problem-solving, higher-order thinking and self-directed learning. Findings suggest that interdisciplinary instruction that incorporates inquiry-oriented, active student engagement holds promise for increasing student depth of knowledge, one of the primary goals of Florida's revised mathematics and science standards.

Webcasts provide free, downloadable materials for Florida and beyond

Global Educational Outreach in Science, Engineering, Technology (www.geoset.info)

Developed by a team of FSU scientists led by Nobel laureate and FCR-STEM Director Harry Kroto, GEOSET uses a webcasting platform to provide free, downloadable teaching materials created by science and technology experts and educators. This award-winning site includes modules that help Florida educators teach essential math and science concepts for grades K-12, introduce students to science at the cutting edge and encourage them to consider STEM careers.

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Write us: FCR-STEM, 4600C University Center, Florida State University, Tallahassee, FL 32306-2540 USA

B3-3: Approved Career and Technical Education STEM Programs for Race to the Top

Florida's MOU requires participating LEAs to **"…**implement at least one additional high school career and technical program that provides training for occupations requiring science, technology, engineering, and/or math (STEM). The LEA will pay, or secure payment for the industry certification examination for graduates of such programs. These programs must lead to a high-wage, high-skill career for a majority of graduates that supports one of the eight targeted sectors identified by Enterprise Florida and result in an industry certification. The LEA will ensure that these programs will include at least one Career and Technical Education course that has significant integration of math or science that will satisfy core credit requirements with the passing of the course and related end-of-course exam."

Approved high school career and technical programs include:

Aerospace Technologies
Animal Biotechnology
Architectural Drafting
Biomedical Engineering
Building and Construction Technology
Civil Engineering
Drafting/Illustrative Design Technology
Electrical Drafting
Electronic Drafting
Engineering Technology
Environmental Resources
Industrial Biotechnology
Mechanical Drafting
Pathways to Engineering – Aerospace Engineering
Pathways to Engineering – Biotechnical Engineering
Pathway to Engineering – Computer Integrated Manufacturing
Plant Biotechnology
Power and Energy Technology
Structural Drafting

Program descriptions are available at http://www.fldoe.org/arra/racetothetop/stem.asp.

B3-4: Section (B) Initiative Summary Chart

Federal Requirement	Initiative	Implementation Outcomes	Implementation Indicators	Total Budget
(B)(3)(i) Supporting the transition to enhanced standards and high-quality assessments	Curricular Tools	· By school year 2012-2013, student and teacher support tools to implement the Common Core will be accessible to all students and teachers in Florida.	· Year 1: Adoption of CC, inclusion of CC in standards database, rate CC for levels of complexity; text demand study; Standards Tutorial revisions; Highly Effective Teacher Instructional materials report developed ; contract with instructional technology specialists to support these additions to the teacher standards tool.	$46,619,000
			· Year 2: Learning progressions, performance descriptions and exemplars for the CC, revised course descriptions w/CC; Standards Tutorial revisions; contract with second instructional technology specialist to support inclusion of interim and formative assessments to the teacher standards tool.	
			· Year 3: CC course descriptions adopted, model lessons for CC; Standards tutorial for grades 3 – 10 revised with CC; Instructional technology specialists to support inclusion of teacher tools into teacher standards tool; grant to postsecondary to develop and pilot professional development tools for use of teacher standards tool	
			· Year 4: All standards tools incorporate CC; Instructional technology specialists to support inclusion of teacher tools into teacher standards tool: grant to postsecondary to provide professional development to LEAs and preservice programs on use of teacher standards tool	
(B)(3)(i) Supporting the transition to enhanced standards and high-quality assessments	Supporting the Transition to High Quality Assessments	· By school year 2013-2014, interim and formative assessment tools will be available to support instruction of and measure	· Year 1: Contracts awarded for interim and formative assessment systems; Florida participates in TIMSS; Florida participates in PIRLS; Content and assessment experts are hired to support implementation of balanced assessment system	$81,480,000

Federal Requirement	Initiative	Implementation Outcomes	Implementation Indicators	Total Budget
		student and teacher progress in all core content areas in all Florida schools. Florida will participate in international assessments during the first two years of this grant period to make international comparisons, analyze progress, and determine prioritized areas of need in interim and formative assessment development. LEA partnerships will have developed assessments in hard-to-measure content areas.	· Year 2: Complete development of items/tasks; Florida participates in PISA; Content and assessment experts are compensated to support implementation of balanced assessment system; LEA partnership grants will be awarded to support development of assessments in hard-to-measure content areas · Year 3: Pilot test; continued assessment development; Content and assessment experts are compensated to support implementation of balanced assessment system; LEA partnership grants to support development of assessments in hard-to-measure content areas · Year 4: Complete statewide assessment through standards instructional tools; Content and assessment experts are compensated to complete implementation of balanced assessment system; LEA partnership grants to complete development of assessments in hard-to-measure content areas	
(B)(3)(i) Supporting the transition to enhanced standards and high-quality assessments	Increased Access to STEM Courses	· Beginning in school year 2010-2011, the percentage of students in Florida enrolled in STEM accelerated coursework, career and technical programs, and middle grades courses with integration of technology will increase annually by 3%.	· Year 1: Contracts awarded for STEM student program for gifted and talented high school students. · Year 2: Districts increase STEM course offerings; grantees initiate partnerships and marketing for STEM student program; Middle grades course technology integration piloted · Year 3: Districts implement STEM Career and Technical Programs: Consortia implement STEM student program	$4,500,000

Federal Requirement	Initiative	Implementation Outcomes	Implementation Indicators	Total Budget
			· Year 4: STEM student program for gifted and talented prepared for statewide replication; Initiatives evaluated and results disseminated	
(B)(3)(i) Supporting the transition to enhanced standards and high-quality assessments	Classroom Support	· By school year 2013-2014, all participating LEAs will have fully implemented lesson study supported by available resources and remaining LEAs will have access to resources.	· Year 1: RFPs for formative and interim assessment systems require lesson study toolkits	6,400,000
			· Year 2: Complete review of literature and design of lesson study resources	
			· Year 3: Complete development and piloting of lesson study resources	
			· Year 4: Lesson study resources are deployed through standards instructional tools.	
				$138,999,000

C1-1: Florida PK-20 Education Data Warehouse Fact Sheet

Florida PK-20 Education Data Warehouse Fact Sheet

The Florida Department of Education maintains the most comprehensive statewide PK-20 longitudinal data system, the PK-20 Education Data Warehouse (EDW), which tracks students through the education pipeline and into the workforce and links teachers to students. The following expands on the characteristics, benefits and contents of the EDW.

EDW Characteristics

- PK-20 public education data integration
- Allows longitudinal analyses
- Student centric
- Historical (1995 forward, when available) and current data
- Confidentiality ensured (personally identifiable information removed)
- State-of-the-art analytical capabilities
- Contains over 13 million unique student records, out of which 2.6 million are current PK-12 students; records for 1.3 million staff (including teaching assignments and course descriptions); and records for 23,471 educational facilities

EDW Benefits

- Tracks students over time and across source data systems
- Performs trend analyses
- Allows for customized queries against summarized data in a timely, efficient manner
- Provides decision-makers with tools and information necessary to make informed, fact-based decisions about education

C1-1: Florida PK-20 Education Data Warehouse Fact Sheet

EDW Contents

- Student
  - Demographics
  - Enrollment
  - Courses
  - Test Scores
  - Financial Aid
  - Awards
  - Employment
- Educational Curriculum
- Staff
  - Demographics
  - Certified Staff
  - Instructional Activities
- Educational Institutions

EDW Source Systems

Twenty-Seven Statewide Data Systems Feed Florida's PK-20 Education Data Warehouse

The Education Data Warehouse is a separate repository that integrates and stores selected historical data (from 1995-96 to the present) from multiple, existing database systems. As shown below, these databases include the source systems for K-12, community colleges, and universities as well as information from the Florida Education and Training Placement Information Program (FETPIP) and the teacher certification database.

C1-1: Florida PK-20 Education Data Warehouse Fact Sheet

Name of Source System	Description
PK-12 Education Data Systems	
Voluntary Prekindergarten Participants	Data on children who participate in the Voluntary Prekindergarten program. Includes data used to calculate kindergarten readiness rates.
Florida Comprehensive Assessment Test (FCAT)	Florida Comprehensive Assessment Test scores for students in grades 3-10 in reading and mathematics, grades 4, 8, and 10 in writing, and grades 5, 8, and 11 in science.
Bright Futures	Includes both initial eligibility determination for high school seniors as well as continuing eligibility awards for college students.
Course Code Directory (CCD)	A comprehensive information resource that provides general and in-depth information on applicable laws and State Board of Education rules; explanations of requirements and policies pertaining to multiple topics, and details on the K-12 course numbering system.
College Board Data	Advanced Placement and SAT scores for Florida students.
School Grades and AYP	K-12 school grades and AYP (Adequate Yearly Progress) results for the federal No Child Left Behind Act.
Education Facilities Information System (EFIS)	K-12 facilities data, including the Florida Inventory of School Houses.
General Educational Development (GED)	Student scores from the five General Educational Development tests used to receive a high school equivalency diploma.
Florida Kindergarten Readiness Screener (FLKRS)	Student scores on the Florida Kindergarten Readiness Screener (FLKRS), administered to assess the readiness of each child for kindergarten.
PK12 Finance	PK-12 funding and finance data.
PK12 Staff	Demographic information, leave, salary, certification subject and type, professional development.

C1-1: Florida PK-20 Education Data Warehouse Fact Sheet

Name of Source System	Description
PK12 Student	Student demographic information, as well as course schedule, teacher, exceptional student program, English Language Learner, student transportation, and Title I information.
Community College and Technical Center Data Systems	
Community College Financial Aid	Student information for students who receive financial aid to attend a public state or community college.
Community College Staff	Staff demographic data as well as academic rank, course load, salary, and benefits.
Community College Student Data Base	Student demographic data as well as high school information, course load, transfer status, entry-level test scores, acceleration mechanisms, program of study, and credit hours earned.
Workforce Development Information System (WDIS)	WDIS is the Workforce Development reporting system and uses five reporting formats. Each format contains specific data elements required for gathering student and teacher data. Includes student demographic and course information.
State University Data Systems	
State University System Financial Aid	Student information for students receiving financial aid to attend a state university.
State University System Staff	State university staff data.
State University System Student	State university student data.
Other Data Systems	
Florida Educational Leadership Examination (FELE)	Florida Educational Leadership Examination registration and scoring data for examinees.
Florida Education and Training Placement Information Program (FETPIP)	Florida Education and Training Placement Information Program contain follow-up data on former students and others, including civilian and federal employment and earnings, continuing education experiences, and military service.

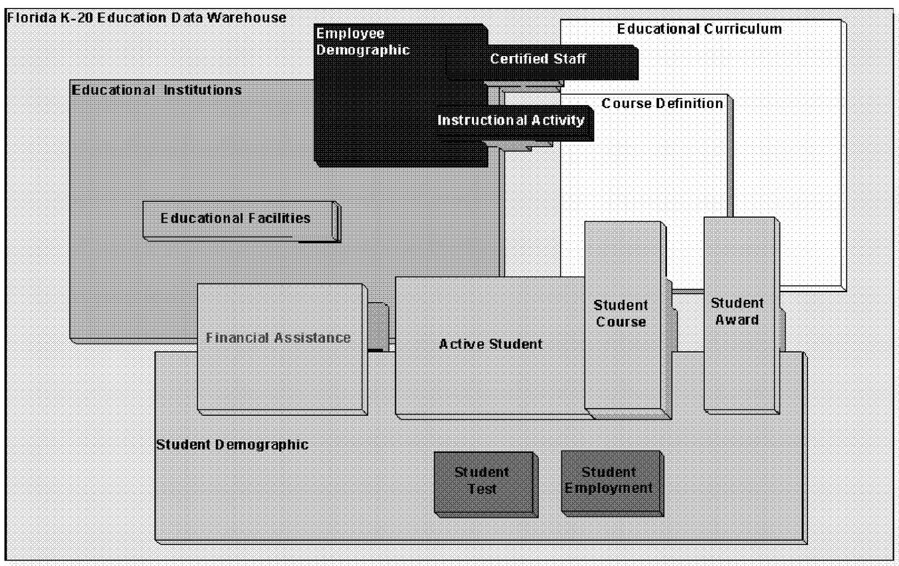
C1-1: Florida PK-20 Education Data Warehouse Fact Sheet

Name of Source System	Description
Federal Family Education Loan Program (FFELP)	Data on loan processing, and claims and recovery for federal loans authorized by the Higher Education Act to assist students and their parents obtain help in paying for the cost of higher education, including Subsidized Federal Stafford Loans, Unsubsidized Federal Stafford Loans, Federal PLUS Loans, and Federal Consolidation Loans.
Florida Student Assistance Grant (FSAG)	Florida Student Assistance Grant Program awards is a need-based grant program available to degree-seeking, resident, undergraduate students who demonstrate substantial financial need and are enrolled in participating postsecondary institutions.
Florida Teacher Certification Examinations (FTCE)	Florida Teacher Certification Examinations registration and scoring data for examinees.
Statewide Course Numbering System (SCNS)	A database of postsecondary courses at public vocational-technical centers, community colleges, universities, and participating nonpublic institutions. The assigned numbers describe course content to improve research, assist program planning, and facilitate the transfer of students.
State Student Financial Aid Database (SSFAD)	Student eligibility and award information for postsecondary educational state-funded grants and scholarships such as the Access to Better Learning and Education Grant Program, Critical Teacher Shortage Student Loan Forgiveness Program, Ethics In Business Scholarship Program, First Generation Matching Grant Program, and Florida Resident Access Grant Program.
Teacher Certification	Teacher certification data for those certified in Florida.

C1-1: Florida PK-20 Education Data Warehouse Fact Sheet

EDW Blueprint

The blueprint below represents the interconnectivity of the various data sources integrated through the EDW.



Florida has a Statewide Longitudinal Data System,

Including the 12 Elements as Required by the America COMPETES Act

DETAILED EVIDENCE

Element	Current Status	Evidence
With respect to preschool through grade 12 education and postsecondary education:		
1. A unique statewide 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).	The Education Data Warehouse (EDW) assigns each student a unique 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).	Florida has a data element named the K20_EDW_ID that is a unique, anonymous, internally assigned, identifier to the student records in the PK-20 Education Data Warehouse.
2. Student-level enrollment, demographic and program participation information.	The EDW contains student-level enrollment, demographic and program participation information at the PK-12, community college, and university levels since 1995.	Florida has the following data elements related to enrollment, demographic, and program participation information: ***Student Demographics*:** COUNTRY CODE, COUNTRY OF BIRTH CODE, DISABILITY INDICATOR, GENDER, LANGUAGE CODE, LANGUAGE PARENTS SPEAKING, QUALIFYING ARRIVAL DATE, RACE/ETHNICITY, STUDENT BIRTH MONTH AND YEAR ***K12 Enrollment*:** EARLY ADMISSION INDICATOR, ENROLLMENT YEAR, GRADE LEVEL, GRADE PROMOTION STATUS, HOMELESS INDICATOR, INSTITUTION ID, KINDERGARTEN READINESS INDICATOR,

Element	Current Status	Evidence
		LIMITED ENGLISH PROFICIENCY SURVEY DATE, LUNCH STATUS, POSTSECONDARY EDUCATION PLAN, PREKINDERGARTEN PROGRAM PARTICIPANT, PRIOR KINDERGARTEN PROGRAM PARTICIPANT, SECTION 504 ELIGIBLE INDICATOR, SINGLE PARENT, WITHDRAWAL DATE , WITHDRAWAL REASON ***Community College Enrollment:*** COURSE ENROLLMENT INDICATOR, ENROLLMENT TERM, ENROLLMENT YEAR, FEE CLASSIFICATION RESIDENCY, FIRST TIME POSTSECONDARY STUDENT INDICATOR, HIGH SCHOOL ENROLLMENT CODE, INSTITUTION_ID, FULL-TIME /PART-TIME STATUS BY TERM ***University Enrollment:*** CLASSIFICATION LEVEL, COLLEGE LEVEL ACADEMIC SKILLS TEST INDICATOR, COURSE LOAD, DOCTORAL CANDIDACY INDICATOR, ENROLLMENT TERM, ENROLLMENT YEAR, FEE CLASSIFICATION RESIDENCY, FIRST TIME POSTSECONDARY STUDENT INDICATOR, HIGH SCHOOL, INSTITUTION ID TRANSFERS HOUR CUMULATIVE, UNIVERSITY TERM CREDIT HOUR EARNED
3. Student-level information about the points at which students	The EDW tracks students within and across districts in Florida including the points at which students exit,	Each school district and the Department shall develop and implement an automated information system component which shall be part of, and compatible with, the statewide comprehensive management information system. Each information system component shall contain automated

Element	Current Status	Evidence
exit, transfer in, transfer out, drop out, or complete P-16 education programs.	transfer in, transfer out, drop out, or complete PK-20 education programs. Exit codes are assigned to all PK-12 students. The EDW tracks graduation/program completion for postsecondary programs.	student, staff and finance information systems and shall include procedures for the security, privacy and retention of automated records. The procedures for the security, privacy and retention of automated student records shall be in accordance with the requirements of 20 U.S.C. 1232g(b)(3), 34 C.F.R. Part 99 and Section 1002.22, F.S. *State Board of Education Rule 6A-1.0014, Florida Administrative Code* The EDW has withdrawal codes for PK-12 and Adult General Education. The withdrawal code is used to describe the reason the student withdrew from the PK-12 institution. This includes students exiting and completing. The EDW also has data elements for Dropout Prevention data and Postsecondary completion information.
4. The capacity to communicate with higher education data systems.	The EDW communicates with higher education data systems by linking PK-12 data to higher education data.	All data collected from state universities shall, as determined by the commissioner, be integrated into the PK-20 data warehouse. The commissioner shall have unlimited access to such data solely for the purposes of conducting studies, reporting annual and longitudinal student outcomes, and improving college readiness and articulation. All public educational institutions shall provide data to the PK-20 data warehouse in a format specified by the commissioner. *1008.31(3), Florida Statutes*
5. A State data audit system	The FDOE PK-12, community college, and	The Florida PK-12 data system, community college data system, and workforce education data system all validate the data collected from the

Element	Current Status	Evidence
assessing data quality, validity and reliability.	workforce data systems validate the data collected from the Local Education Agencies (LEAs) prior to storage in the EDW. The State Auditor General's office reviews the data to assess quality, validity and reliability.	LEAs. The Auditor General shall periodically examine the records of school districts and other agencies as appropriate, to determine compliance with law and State Board of Education rules relating to the classification, assignment, and verification of full-time equivalent student enrollment and student transportation reported under the Florida Education Finance Program. *s.1010.305(1), Florida Statutes*
With respect to preschool through grade 12 education:		
6. Yearly test records of individual students with respect to assessments under section 1111(b) of the Elementary and Secondary Education Act of 1965.	The EDW contains test records of individual students with respect to assessments under section 1111(b) of the Elementary and Secondary Education Act of 1965 after each test administration.	(7) REQUIRED ANALYSES.--The commissioner shall provide, at a minimum, for the following analyses of data produced by the student achievement testing program: (a) The statistical system for the annual assessments shall use measures of student learning, such as the FCAT, to determine teacher, school, and school district statistical distributions, which shall be determined using available data from the FCAT, and other data collection as deemed appropriate by the Department of Education, to measure the differences in student prior year achievement compared to the current year achievement for the purposes of accountability and recognition. (b) The statistical system shall provide the best estimates of teacher, school, and school district effects on student progress. The approach used by the department shall be approved by the commissioner before implementation.

Element	Current Status	Evidence
		(c) The annual testing program shall be administered to provide for valid statewide comparisons of learning gains to be made for purposes of accountability and recognition. District school boards shall not establish school calendars that jeopardize or limit the valid testing and comparison of student learning gains. *s.1008.22, Florida Statutes*
7. Information on students not tested, by grade and subject.	The EDW stores information on all PK-12 students related to enrollment and assessments.	Florida collects enrollment data (see Element 2) and assessment data (see Element 6). Information for this element is derived by matching the enrollment data to the assessment data. Those in the enrollment data that are not in the assessment data were not tested.
8. A teacher identifier system with the ability to match teachers to students.	The EDW matches teachers to students and has performed analyses on this topic. FDOE is participating in a Gates Foundation Teacher-Student Data Link Project.	The student course record and the teacher course record include five elements: course, beginning period, ending period, section, and term. The combination of these five elements is used to create a unique course ID for each course taught by a teacher. The course offering ID exists in the student course enrollment and the teaching activity data. Linking the unique course offering ID between student course enrollments and teaching activity allows FDOE to match teachers to students. A primary instructor indicator is collected in the teaching activity data. This is used in the case of multiple teachers with the same course offering ID.

Element	Current Status	Evidence
9. Student-level transcript information, including information on courses completed and grades earned.	The EDW stores student-level high school transcript information including courses completed and grades earned.	The High School Transcript data contains information about courses taken by students in grades 9 through 12 as well as courses below ninth grade that the student took in order to earn credit toward a high school diploma. Dual enrollment courses are also included. Information about the courses taken includes the academic year and term in which the course was taken, the amount of credit attempted and the amount earned, the school in which the student was enrolled for graduation and the school at which the student took the course, the grade earned in the course, and the subject area for which the course is applicable for graduation requirements.
10. Student-level college readiness test scores.	The EDW stores student-level college readiness test scores including the SAT, ACT, and Florida's College Placement Test (CPT).	The following data elements are available on college readiness: COLLEGE ENTRY LEVEL SUBTEST CODE & SCORE COLLEGE ENTRY LEVEL TEST TERM & YEAR TEST ID (e.g., ACT, SAT)
With respect to postsecondary education:		
11. Data that provide information	The EDW follows students' successful transition from PK-12 to postsecondary	*State Board of Education Rule 6A-10.0315, Florida Administrative Code* establishes the College Preparatory Testing, Placement, and Instruction. This program is used to determine if a student needs remedial coursework in

Element	Current Status	Evidence
regarding the extent to which students transition successfully from secondary school to postsecondary education, including whether students enroll in remedial coursework.	institutions, including those that enroll in remedial coursework.	postsecondary education. The following *State Board of Education Rule 6A-10.0315(21), Florida Administrative Code* establishes that the Commissioner receives the data: "The Commissioner shall report to the State Board of Education by November 30 each year the results of the common placement testing." FDOE annually publishes the *Performance on Common Placement Tests*, a report of the students who scored above the requisite placement cut scores and do not need remedial coursework *1007.21(2)(c), Florida Statutes* The State Board of Education, in conjunction with the Board of Governors, shall develop articulation accountability measures which assess the status of system-wide articulation processes authorized under s. 1007.23 and establish an articulation accountability process. *1008.38, Florida Statutes* Florida annually publishes the High School Feedback Report which provides information on high school student postsecondary preparation and entrance into postsecondary education.
12. Data that provide other information	The EDW follows students from PK-12 to postsecondary institutions. This includes	*State Board of Education Rule 6A-10.0315, Florida Administrative Code* establishes the College Preparatory Testing, Placement, and Instruction. This program is used to determine if a student needs remedial coursework in

Element	Current Status	Evidence
determined necessary to address alignment and adequate preparation for success in postsecondary education.	information necessary to address alignment and adequate preparation for postsecondary.	postsecondary education. The following *State Board of Education Rule 6A-10.0315(21), Florida Administrative Code* establishes that the Commissioner receives the data: "The Commissioner shall report to the State Board of Education by November 30 each year the results of the common placement testing." FDOE annually publishes the *Performance on Common Placement Tests*, a report of the students who scored above the requisite placement cut scores and do not need remedial coursework The common placement test authorized in s. 1001.03(10) and 1008.30, F.S. or a similar test may be administered to high school students who have chosen one of the four destinations. The results of the placement test shall be used to target additional instructional needs in reading, writing, and mathematics prior to graduation. *1007.21(2)(c), Florida Statutes* The State Board of Education, in conjunction with the Board of Governors, shall develop articulation accountability measures which assess the status of system-wide articulation processes authorized under s. 1007.23 and establish an articulation accountability process. *1008.38, Florida Statutes* Florida annually publishes the High School Feedback Report which provides

Element	Current Status	Evidence
		information on high school student postsecondary preparation and entrance into postsecondary education. Florida's Statewide Course Numbering System (SCNS): The SCNS was created in the 1960s and serves as a key component of Florida's K-20 seamless system of articulation. The system provides a database of postsecondary courses at public vocational-technical centers, community colleges, universities, and participating nonpublic institutions. The assigned numbers describe course content to improve research, assist program planning, and facilitate the transfer of students. Florida's Course Code Directory (CCD): The CCD is a comprehensive information resource consisting of a narrative section providing general and in-depth information on applicable laws and State Board of Education rules; explanations of requirements and policies pertaining to multiple topics, and details on the K-12 course numbering system. All programs and courses funded through the Florida Education Finance Program (FEFP) and courses or programs for which students may earn credit toward high school graduation are included. The CCD assists counselors, students and parents in schedule planning, provides course specific information including course level and length, and lists appropriate teacher certification levels for courses. It allows schools,

Element	Current Status	Evidence
		districts, and the state to identify courses by specific course number, thereby providing comparable information across various levels of administration and consistency in reporting. Florida participates in the America Diploma Project Network: The America Diploma Project (ADP) addresses school improvement issues. This project uses data to support *"a new vision of accountability and the kind of information states should collect, report, and enable schools and districts to use."* ADP analyzed how Florida's college- and career-ready indicators are used, measuring student progress toward college and career readiness.

C3-1: Florida Department of Education
Research Request Process

The following is the research request packet submitted to FDEO by researchers:

Research requests should be focused and demonstrate a direct relationship between the data elements requested and the research questions posed. While the state of Florida collects a vast array of information at all levels of education, data provided for a single research request is limited to the extent possible to maintain the confidentiality and integrity of the data.

In order to provide the Integrated Education Data Systems (IEDS) with a clear understanding of your research request, please provide the following detailed information.

I. Project Information

A. Requester:
B. Organization:
C. Research Project Title:
D. Packet Submission Date:
E. Is this a funded project?
F. If so, what is the amount of the award?

II. Project Description

A. What is the purpose of the research? Provide a summary/abstract of the topic to be researched.

B. List the research questions to be answered by the proposed project. **The questions need to be specific and should be numbered; they should not be imbedded in a descriptive paragraph.**
   1.
   2.

C. Complete the following sentence duplicating it as necessary to define all of the cohorts you are requesting.

   I am requesting a cohort of ***(insert education level – K12, community college, technical center, state university)*** (***students/teachers)*** in ***(grade levels)*** beginning with the academic year ***(year)*** and tracking forward to ***(academic year)*** and/or tracking backward to ***(academic year)***.

D. List any specific characteristics required for your cohort. Examples include, but are not limited to, Title I schools, schools who have school grades, schools with International Baccalaureate program, First-time-in-college students.

E. Does your research require a comparison group? Describe how this comparison group is to be defined. Be explicit. **Note: Comparison groups may not be defined as "all students." They must be a subset of students related to the subject matter being studied.**

F. Matched Dataset: I ☐ will ☐ will not provide FLDOE with a dataset of identifiable information to be matched. My file will be ready for submission to FLDOE by ***(date)***.

NOTE: Please do not submit your matched dataset with this request. If approved, you will be sent instructions regarding the format required and how to submit the data.

A matched dataset is considered acceptable if it contains at least 3 out of 5 of the following data elements. Please indicate which of these elements is contained in your matched dataset.

☐ Date of Birth ☐ First Name
☐ District ID (for student match only) ☐ Last Name
☐ Social Security Number (staff only) or Student ID (student only)

NOTE: We will not return matched data using the requestor's IDs; only anonymized data will be returned to you. Additionally, we will not return any matched data that can be rendered identifiable through any combination of data elements.

G. Provide a statement of why published data and reports readily available on DOE's Web site are not sufficient to answer the research questions posed.

H. Describe the methodology planned for this analysis.

NOTE: Data elements do not include calculated fields. If any calculation is required for your analysis that is not already published by FLDOE you will need to request the individual data elements necessary and describe how you plan to calculate the rate. The calculation will require approval by the appropriate FLDOE program office.

III. Timeline Requirements

Researchers should expect a minimum of 3-4 weeks to receive notification regarding whether the request has been approved. This duration can vary greatly by individual proposal depending upon data permissions required, datasets requested, and the number of proposals currently approved.

A. Provide a detailed timeline of the entire research project.

B. Timeline should, at a minimum, include the following:
   1. Data Collection Phase (include time for the FLDOE research request process)
   2. Data Analysis Phase
   3. Report Writing Phase
   4. Final Report/Publication

C. Approval of research proposals by FLDOE is merely the first step in a multi-step process before research can actually commence. In many instances, FLDOE must obtain permissions to provide certain data from external data providers. This process can range from a few weeks to many months depending upon the nature and status of data sharing agreements between the FLDOE and the external data providers. Therefore, we may or may not be able to meet the expectations proposed in your timeline.

IV. Statement of Benefit Requirements

According to 1008.385(1)(a), Florida Statutes, the Commissioner of Education has a responsibility to sponsor research that will provide information about educational needs or the effect of alternative educational practices. The Statement of Benefit will establish how your research meets those requirements.

A. In the Statement of Benefit, demonstrate how the research meets one or more of the following criteria:
   1. Research is designed to provide information about educational needs in Florida.
   2. Research is designed to provide information about the effect of alternative educational practices in Florida.
   3. Research is designed to measure the effect of an implemented state policy or program; include any statute or State Board of Education rule citations. Researcher must demonstrate how this research is unique and has not been previously conducted by the State or Federal government.
   4. Research was requested by an office within DOE. If the requested research is required by Florida statute, Florida State Board of Education Florida Administrative Code or Federal regulation provide the appropriate citation. This criterion will require a signed statement of consent by the DOE office stating the research was requested.

B. Additionally, provide a statement that answers the following questions.
   1. How can the DOE use the publication/research in its final form?
   2. Specifically, which office will benefit from the research conducted?

NOTE: Demonstration of how the research meets one or more of the criteria above does not imply automatic approval of the proposal. Acceptance of the research request is dependent on approval of all sections of the Unit Record Data Request packet.

V. Data Element Crosswalk

Instructions: Provide a crosswalk of each data element requested, the years requested for that element, the grades requested for that element, and how it relates to one or more of your research questions. List each data element once with only one data element per row. Add as many rows as necessary.

If you receive multiple datasets from IEDS for this request, you will be notified of the key fields to use for linking.

NOTE: If a proposal is approved, data elements may be removed from your request if FLDOE determines there is insufficient evidence of how the data element relates to the research question.

Data Element Requested Must use EDW element name (see Metadata)	Years Requested	Grade Levels Requested	Related Research Question(s) Use Question Number from Form 1: Information Request	Explain how this element relates to the Research Question

VI. Security and Access Agreement

The information available through the Integrated Education Data Systems (IEDS) is, by federal and state law, confidential and shall be used only for the authorized purposes. Under no circumstances shall records and reports be released by the IEDS to any party unless such release is in strict accordance with the provisions, and to the entities identified in, the Family Educational Rights and Privacy Act (FERPA), 20 U.S.C. § 1232g; 34 C.F.R Part 99; and chapter 119 and section 1002.22, Florida Statutes. The party receiving data acknowledges its separate obligations in accordance with the requirements of these provisions by establishing duties of confidentiality, privacy, and nondisclosure.

The information released by the party receiving data provided by the IEDS will be used for the purpose of generating aggregate statistics that will be used to evaluate educational programs or needs in Florida. Deliberate or accidental misuse of information may result in loss of access, disciplinary action, or dismissal or prosecution under the scope of all applicable federal and state laws and regulations.

IEDS REQUESTOR/USER REQUIREMENTS

All persons who gain access to information from the IEDS in any form must adhere to the provisions below. Requestors/Users are required to initial below each section.

The Requestor and/or User shall:

1. Be responsible for the information obtained and must use it only for authorized purposes;
2. Only use individual records or anything that could generate personally identifiable information for the validation of queries/programming;
3. Destroy unit record data that have been provided from the IEDS on or before the date assigned by the IEDS and provide certification to the IEDS staff that such records have been destroyed;
4. Prior to publication or release, provide any documents generated as a result of using data received from the IEDS to FDOE for review and verification that the intended purpose has been adhered to;
5. Store each file sent by FDOE and in possession of the user that contains unit record data, and each hard copy of such information, in a secure location, such as a locked desk or file cabinet, except when in use for the purposes for which it was provided. Automated records shall be stored in secured computer facilities with strict Automated Data Processing ("ADP") controls;
6. Retain only one copy and one backup copy of the data provided. In the event the destruction of data is required, user must provide written confirmation that all copies are properly destroyed;
7. Notify FDOE within 30 days when access to unit record data has been transferred from the requestor or user to other personnel, and provide a notarized statement that the transferee agrees to the terms and conditions herein.

Initial: ________________

The Requestor and/or User may not, and must ensure that no other individuals:

1. Share unit record data with any other individual or organization without the express written consent of FDOE;
2. Use data for any other purpose other than analysis and evaluation;
3. Allow any unauthorized use of information provided or generated;
4. Use the results of information provided/generated in an effort to determine the identity of any student or employee for whom data is included in the IEDS;
5. Use the data to make a decision about the rights, benefits, or privileges of those individuals identified through the matching process;
6. Publicly disseminate reports containing identifiable data or aggregate cell sizes of less than 10 individuals. (Reports must mask these cells so that results are not revealed.)

Initial: _______________

Requestor Information:

Name of Requestor: ____

Title: ____

Institution/Division: ____

Physical Address: ____

____

Phone Number: _________________________________

SunCom Number: _______________________________

Email Address: __________________________________

I understand and agree to the terms, conditions, and responsibilities set out in this Agreement.

Signature of Requestor ______________________________ **Date** _______________

Seal of Notary:

____

Form of Identification:

_____ **Personally known**

_____ **Identification provided**

Type of Identification:

____

____

To be completed if information is different than that of the Requestor:

Data User/Analyst/Researcher: (Person using the data)

User Information:

Name of User: ____

Title: ____

Institution/Division: ____

Physical Address: ____

____

Phone Number: __________________________________

SunCom Number: ________________________________

Email Address: __________________________________

I understand and agree to the terms, conditions, and responsibilities set out in this Agreement.

Signature of User/Analyst/Researcher: ____________________________ Date ________________
(if applicable)

Seal of Notary:

Form of Identification:
_____ Personally known
_____ Identification provided
Type of Identification:

____

____

____

For Internal Use Only: Data Usage Expiration Date______________________

Submit the Unit Record Data Request Packet to

data.request@fldoe.org

Please submit form with original signatures to the IEDS at the address below.

Department of Education
Integrated Education Data Systems Team
325 West Gaines Street, Room 844
Tallahassee, Florida 32399-0400

FDOE Research Request Process

1 - Proposal packet is submitted by data requestor and logged into the FDOE research request tracking system. The packet is assigned to a staff member, Assignee, for routing through the process.
2 - Proposal packet is routed to Director of the EDW for review of the requested data elements and years.
3 - Proposal packet is e-mailed to the assigned Program Office along with a copy of the reviewing guidelines and an explanation of the Program Offices' responsibilities should they approve the packet.
4 - Meeting invite is sent to the FDOE Research Consortium and Program Office contact to discuss the request.
5 - The FDOE Research Consortium and Program Office contact will comment/discuss the proposal. All questions will be collected at the meeting or via e-mail by that meeting. If necessary, Assignee will contact the requestor with the comments/questions collected at the research request meeting.
6 - Once responses are received, the FDOE Research Consortium and Program Office contact will be alerted to the responses. Discussion will continue via email and the Program Office will then have an opportunity to approve or deny the request.
7 - Proposal packet is routed to the FDOE Research Consortium leader for approval.
8 - Proposal packet is routed to Deputy Commissioner of ARM for final approval.

FDOE Research Consortium Review Guidelines

The following are the guidelines each member of the FDOE Research Consortium uses in evaluating a research request.

Research Focus

1. Does FDOE produce a report or study that already answers the research questions posed?
2. Has the Florida Office of Program Policy Analysis and Government Accountability (OPPAGA), US Education Department, or some other entity or researcher already done this same study or a very similar study? If so, would this study update those results or is the other study too recent?
3. Given the abstract, are the research questions appropriate?
4. Does the methodology posed seem appropriate? That is, are elements defined appropriately and measures operationalized as they should be? Is the methodology appropriate for the research described?
5. Does the Statement of Benefit adequately meet one of the criteria below:
    a. Research is designed to provide information about educational needs in Florida.
    b. Research is designed to provide information about the effect of alternative educational practices in Florida.
    c. Research is designed to measure the effect of an implemented state policy or program; include any statute or State Board of Education rule citations. Researcher

must demonstrate how this research is unique and has not been previously conducted by the State or Federal government.

d. Research was requested by an office within FDOE. If the requested research is required by Florida statute, Florida State Board of Education Florida Administrative Code or Federal regulation, provide the appropriate citation. This criterion will require a signed statement of consent by the DOE office stating the research was requested.

Data Focus

1. Is the request for more than 5 years of data?
   a. If so, is annual data necessary or can we recommend pre/mid/post years to study?
2. Is the data requested for future years?
   a. If so, is this a new program being studied which requires future years due to recent implementation?
   b. Is this an established program/policy? If so, can we suggest the requestor use what is currently available and come back in X years to update their results?
3. Are the data elements listed (Section V of the packet) appropriate given the research questions posed?
4. If there is a comparison group is it appropriately described?

Program Office Research Review Guidelines

The following are the guidelines the Program Office contact uses in evaluating a data request.

1. Does DOE produce a report or study that already answers the research questions posed?
2. Has the Florida Office of Program Policy Analysis and Government Accountability (OPPAGA), US Education Department, or some other entity or researcher already done this same study or a very similar study? If so, would this study update those results or is the other study too recent?
3. Do the research questions posed make sense in light of policies and procedures for your program?
4. Does the methodology posed seem appropriate? That is, are elements defined appropriately and measures operationalized as they should be?
5. Will this research in its final form be of use to your program or your office? How do you anticipate using the results?
6. Notice the years of data requested (Section II, C of the packet). Is there anything unusual during those years regarding your program that would affect the study? Examples include, but are not limited to:
   a. The program was voluntary for the first X years but then became mandatory.
   b. The program was not implemented until 19XX or 200X.
   c. The statute/rule about the program was completely revamped in X year causing a change in implementation.
7. Review the timeline (Section III of the packet) submitted by the researcher. Will the final product still be of use to your program/program office at the projected date of completion?

C3-2: Florida Department of Education Research Partners

The following is a list of LEAs, universities, and research organizations FDOE partnered with to complete a research study in 2009.

Florida LEAs
Brevard District
Florida Virtual School
Hillsborough District
Miami-Dade District
Orange County District
Palm Beach District
Polk County School Board
Volusia School District
Palm Beach Community College
South Florida Community College

Florida Universities
Florida Board of Governors
Florida State University
University of Florida
University of South Florida

Universities Outside of Florida
Brown University
Fordham University
George Washington University
Harvard University
John Hopkins University
Northwest University
Northwestern University
University of Chicago
University of Michigan
University of North Carolina, Greensboro
University of Pennsylvania

FDOE Research Organization
Florida Center for Reading Research

Not-for-profit Research Foundations/Centers
Center for Research on Education Outcomes (CREDO)
Community College Research Center (CCRC)
Florida Diagnostic and Learning Resources System (FDLRS) Action Resource Center
Foundation for Excellence in Teaching / American Institute for Research / MGT of America
Human Resources Research Organization (HumRRO) / Center on Education Policy (CEP)
Institute for School Innovation (Project CHILD)
JBL Associates
Mathematica Policy Research
National Student Clearinghouse (NSC)/Bill & Melinda Gates Foundation
The Parthenon Group

Assessment Vendor
ACT, Inc.
Pearson Education
The College Board

Other State of Florida Agencies
Agency for Workforce Innovation's Office of Early Learning
Florida Department of Children and Families
Florida Governor's Office
Florida Legislature
Florida Office of Program Policy Analysis & Government Accountability (OPPAGA)

Miscellaneous Entities Who Have Received Data From FDOE
US Education Department
Council on the Social Status of Black Men & Boys (Florida Council)
Florida Council 100 (Florida Council)
Florida Legislative Constituents
Media including *Hernando Today*, *Newsweek,* and *Orlando Sentinel*

C3-3: Section (C) Initiative Summary Chart

Federal Requirement	Initiative	Outcomes	Total Budget
(C)(1) Fully implementing a statewide longitudinal data system		This requirement is met through the implementation of Florida's PK-20 Education Data Warehouse.	$ -
(C)(2) Accessing and using State data			
Initiative 1	Connect key state education data resources through a centralized, customer-friendly portal to enhance accessibility	By 2012, create a centralized portal to serve as the gateway to publicly accessible actionable information and to secure, confidential key state education technology resources via single sign-on.	
Initiaitive 2	Develop dashboards, customizable reports, and data for access through the centralized, customer-friendly portal		$ 11,773,653
(C)(3) Using data to improve instruction			
(i) Increase the acquisition, adoption, and use of local instructional improvement systems	Increase acquisition and implementation of local instructional improvement systems that meet minimum standards	By 2014, equip all Florida LEAs with a Local Instructional Improvement System that meets the minimum standards.	$ 5,121,000
(ii) Support participating LEAs that are using instructional improvement systems in providing effective professional development	Leverage proven, ongoing efforts to provide professional development on how to access and use data to inform instructional practices and decision-making	By 2014, provide professional development to all schools in all LEA's on how to access and use data.	$ 4,448,150
(iii) Make the data from instructional improvement systems, together with statewide longitudinal data system data, available and accessible to researchers	Provide data from the state and local instructional improvements systems for approved educational research studies	By 2011, establish a research agenda consistent with Florida's RTTT initiatives and student achievement goals and make relevant data available to the research community from state and local instructional improvement systems.	$ -
RTTT Data and Technology Initiatives			
Data Assurance Advisory Group		The Data Assurance Advisory Group will provide requirements and feedback during design and implementation on data and technology initiatives over the life of the grant.	$ 101,810
RTTT Data and Technology Initiatives	Upgrade and enhance Sunshine Connections to support all RTTT data and technology initiatives.		$ 4,399,966
		Total Budget	$ 25,844,579

LIST OF INSTITUTIONS OFFERING AN APPROVED EDUCATOR PREPARATION INSTITUTE (EPI)

1. Brevard Community College
2. Broward College
3. Central Florida Community College
4. Chipola College
5. Daytona State College
6. Florida Atlantic University
7. Florida State College at Jacksonville
8. Florida Gulf Coast University
9. Florida Keys Community College
10. Gulf Coast Community College
11. Hillsborough Community College
12. Indian River State College
13. Lake City Community College
14. Lake Sumter Community College
15. Miami Dade College
16. North Florida Community College
17. Palm Beach State College
18. Pasco-Hernando Community College
19. Pensacola Junior College
20. Polk State College
21. Santa Fe College
22. Seminole State College
23. South Florida Community College
24. St. Johns River Community College
25. St. Petersburg College
26. State College of Florida, Manatee-Sarasota
27. Teacher Education University
28. University of Florida
29. University of North Florida
30. University of West Florida
31. Valencia Community College

D1-2:
ANNUAL REPORT, CRITICAL TEACHER SHORTAGE AREAS
2010-2011

November 2009

Office of Research and Evaluation
Florida Department of Education

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METHODOLOGY FOR THE IDENTIFICATION OF TEACHER SHORTAGE AREAS 2010-11

Section 1012.07, Florida Statutes, requires that the State Board of Education annually identify critical teacher shortage areas. This list of shortage areas is used in implementing the Critical Teacher Shortage Tuition Reimbursement Program and the Critical Teacher Shortage Student Loan Forgiveness Program. State Board of Education Rule 6A-20.0131(2) further provides that:

> *(1) On or before December 1 of each year, the Commissioner shall recommend to the State Board for approval the specific teaching areas and high priority locations in which critical teacher shortages are projected for the public schools during the year following the academic year in which approval is made.*
>
> *(2) In accordance with procedures approved by the Commissioner, a list of critical teacher shortage areas shall be prepared based on consideration of current supply and demand information related to Florida public school instructional personnel including but not limited to:*
> *(a) The number and percentage of vacant positions in each teaching discipline;*
> *(b) The number and percentage of positions filled by teachers not certified in the appropriate field;*
> *(c) The projected annual supply of graduates of state approved Florida teacher education programs for each discipline.*

Based on the information outlined above, the following subject fields have been designated by the State Board of Education as critical teacher shortage areas for 2010-11.[1]

- **middle and high school level mathematics;**
- **middle and high school level science;**
- **middle and high school level English/language arts;**
- **reading;**
- **all exceptional student education programs;**
- **English for speakers of other languages (ESOL);**
- **foreign languages; and**
- **technology education/industrial arts.**

Shortages During Fall 2008

The Department of Education surveys the school districts each fall to determine the number of teaching positions filled from July 1st to October 1st. Survey results provide two indicators of fields currently facing critical shortages which include: (1) the number of new hires as a percentage of teachers in each field and (2) the number of positions filled by teachers who lack appropriate certification.[2]

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[1]See page 12 for a list of critical teacher shortage areas for 1984-85 through 2010-11.
[2]New hires are new to the district, but may have taught in another district in prior years and, therefore, may not be new to Florida public schools.

Number of New Hires

The fall 2008 New Hires Survey indicates that districts hired 10,604 classroom teachers and 542 other instructional personnel between July 1st and October 1st. These numbers are 44 percent lower than the prior year (18,930).

The new hires represented 6.3 percent of all classroom teachers teaching in fall 2008, compared to 11 percent in 2007 and 13 percent in 2006. (See Table 1.) This decrease in the number of new hires is doubtless a reflection of the economy, accompanied by a drop in revenues, the restructuring of courses and the school day in some districts, a delay in requiring districts to meet class size targets at the classroom level, and teacher layoffs.

Table 2 shows the number of new hires as a percentage of the estimated number of teachers for the critical teacher shortage areas. New hires in autism represented 10 percent of the total number of teachers in that field. English and science represented 8 percent.

Table 1
Number of Fall New Hires – Classroom Teachers

	2003	2004	2005	2006	2007	2008
Fall New Hires	19,317	20,010	21,919	21,282	18,930	10,604
Classroom Teachers	149,128	158,625	164,665	168,181	172,215	168,938
As a Percentage of Teachers	13.0	12.6	13.3	12.7	11.0	6.3

Table 2
Number of New Hires Compared to Total Number of Teachers - Fall 2008
Critical Teacher Shortage Areas

Subject Field	New Hires	Estimated Number of Teachers	New Hires as a Percentage of Teachers
English./Lang. Arts	846	10,344	8.2
Math	729	11,188	6.5
Science	771	9,370	8.2
Reading	354	5,577	6.3
Foreign Languages	273	3,690	7.4
ESOL	113	2,826	4.0
Technology Educ./Industrial Arts	32	597	5.4
ESE (Varying Excep., etc.)	1,048	16,671	6.3
Speech/Language Impaired	194	2,596	7.5
Deaf or Hard of Hearing	20	414	4.8
Visually Impaired	9	238	3.8
Autism Spectrum Disorder	111	1,068	10.4
Occupational/Phyical Therapy	19	488	3.9
PreK Handicapped	59	1,275	4.6
Gifted	77	2,224	3.5
Exceptional Other	63	571	11.0
Total Exceptional	1,600	25,545	6.3

New-Hires Hired Out-of-Field

A second indicator of teacher shortages used to identify critical teacher shortage fields is the percentage of newly hired teachers who were not certified in the field that they were assigned to teach. Overall, 7.3 percent of the new hires in fall 2008 were not appropriately certified, the lowest in the last 10 years, and half the percentage out of field in 2000 through 2002. (See Table 3.)

Table 3
Percentage of New Hires
Not Certified in the Appropriate Field

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Basic Fields	12.8	10.2	13.1	12.3	8.9	8.9	8.6	10.1	9.0	7.0
Exceptional Student Educ.	27.3	30.0	31.8	29.9	22.1	19.8	15.1	16.7	14.5	9.1
Career Education	15.0	15.3	20.6	9.9	15.3	10.0	7.8	10.8	8.7	7.8
Total Classroom	15.6	14.2	16.9	15.8	11.5	10.7	9.6	11.1	9.8	7.3

Districts have reported that the decrease in the hiring out-of-field teachers that began about 2002 was due to:

- The emphasis on hiring only "highly qualified teachers," as defined by the federal No Child Left Behind Act of 2001. Districts began making a special effort to locate appropriately certified teachers.
- The focus on smaller classes in grades K-3, resulting in districts hiring significantly more teachers certified in elementary education. Teachers with this certification are typically easier to find than teachers certified in critical teacher shortage areas.
- The collapsing of such certification areas as mentally handicapped, specific learning disabled, emotionally handicapped, varying exceptionalities, and related fields into one category, ESE, making it easier to find appropriately certified teachers for these areas. Similarly, the change in elementary certification coverage from grades 1-6 to grades K-6 has made it easier to recruit kindergarten teachers in field.
- Statutes enabling teacher applicants to document mastery of subject area knowledge, required for issuance of a Temporary or Professional Certificate, by achieving a passing score on a subject area examination. This has expanded certification options to those with academic degrees who have not completed an approved teacher education program. (See section on Teacher Supply beginning on page 8.)

In addition to these reasons, the significant drop in 2008 may well be in response to the economy, as indicated above.

Despite recent decreases in out-of-field teachers in exceptional student education, the percentage continues to be higher than other areas. Nine percent of ESE teachers hired in fall 2008 were not certified in the appropriate field, compared to seven percent in other areas.

Table 4 displays information on the number of new hires in fall 2008 for each of the fields designated as critical teacher shortage areas. As shown in Column 3:

- 53 percent of the teachers hired to teach middle or high school reading were not appropriately certified. Teachers are considered in-field for teaching reading at the elementary level if they are certified in either elementary education or reading. Thus it is easier to fill positions in elementary reading than positions in reading at the middle or high school level.
- 40 percent of the teachers hired to teach the gifted were not appropriately certified. Principals sometimes fill such positions with experienced subject area teachers who lack course work in gifted, but who may later satisfy requirements for endorsement in this field.
- 25 percent of the new hires in technology education did not have appropriate certification.
- 12 to 17 percent of the new hires in ESOL, hearing impaired, autism, and foreign languages were hired out of field.
- 7 to 9 percent of the teachers hired to teach ESE and English were hired out-of-field.
- Typically, few out-of-field teachers are hired in the areas of speech pathology and occupational and physical therapy because of the highly specialized nature of these areas.

Table 4
New Hires Hired Out of Field
Critical Teacher Shortage Areas - Fall 2008

Subjects	New Hires	New Hires Who Were Not Certified in the Appropriate Field	
		Number	Percentage
Middle/Jr and Senior High Basic			
English/Lang. Arts	846	59	7.0
Math	729	33	4.5
Science	771	42	5.4
Reading	354	187	52.8
K-12			
Foreign Language	273	32	11.7
ESOL	113	19	16.8
Industrial Arts/Technology Educ	32	8	25.0
Exceptional Student Education			
ESE (Varying Excep, etc.)	1,048	92	8.8
Speech Impaired	194	2	1.0
Hearing Impaired	20	3	15.0
Visually Impaired	9	0	0.0
Autistic	111	15	13.5
Occupational/Physical Therapy	19	0	0.0
PreK Handicapped	59	1	1.7
Gifted	77	31	40.3
Exceptional Other	63	1	1.6
Total Exceptional	1,600	145	9.1

Teachers Currently Teaching in Areas in Which They Are Not Certified

A third indicator of teacher shortage is the number of teachers currently teaching courses in subjects in which they are not certified. As shown in Table 5, the percentage of inappropriately certified teachers in these critical areas includes approximately 22 percent in middle and high school reading, ESOL, and gifted; 18 percent in pre-K handicapped; and 7 to 10 percent in foreign languages, and hearing impaired.

Data on out-of-field status may not be available for several fields where teachers qualify outside the usual certification process. For instance, a number of physical, occupational, and speech therapists are considered in field by virtue of satisfying licensure requirements rather than through state certification. Similarly, in career education fields, such as technology education, districts may hire individuals with expertise in that field, thus bypassing certification based on course requirements.

Table 5
Estimated Number of Full-time Equivalent Teachers
Not Certified in the Appropriate Field
Critical Teacher Shortage Areas
Fall 2008

Subject Field	Number Teachers	Est. Number Teachers Not Approp. Certified	Percentage Not Approp. Certified
Language Arts*	10,344	401	3.9
Math*	11,188	332	3.0
Science*	9,370	503	5.4
Foreign Languages	3,690	362	9.8
Reading *	5,577	1,250	22.4
ESOL	2,826	629	22.3
Indust. Arts/Techology Educ.	597	NA	NA
Intellectual Disabilities	1,702	203	11.9
Specific Learning Disabilities	1,186	89	7.5
Emotionally Handicapped	1,816	121	6.7
Varying Exceptionalities	11,846	421	3.6
Physically Impaired	121	10	8.3
Speech/Language Impaired	2,596	NA	NA
Deaf or Hard of Hearing	414	39	9.4
Visually Impaired	238	9	3.8
Autism Spectrum Disorder	1,068	35	3.3
Occupational/Physical Therapy	488	NA	NA
PreK Handicapped	1,275	228	17.9
Gifted	2,224	492	22.1

*Middle and high school grades.

Critical Teacher Shortage Areas
Financial Assistance Programs

The Florida Department of Education's Office of Student Financial Assistance administers two financial assistance programs designed to increase the number of qualified teachers in designated critical teacher shortage areas: the Critical Teacher Shortage Tuition Reimbursement Program and the Critical Teacher Shortage Student Loan Forgiveness Program.

The Critical Teacher Shortage Tuition Reimbursement Program provides financial support to qualified teachers by assisting them with the repayment of undergraduate and graduate education courses that will lead to certification in a critical teacher shortage subject area. Eligible applicants may receive payments of up to $78 per credit hour, for a maximum 9 hours per award year or $702. The program maximum amount eligible applicants may receive is up to $2,808 for up to 36 semester hours. Awards are prorated based upon the number of eligible applicants and the appropriation provided by the Legislature. The average amount awarded in 2008-09 was $104, which is an award of $14 per credit hour or 18 percent of the maximum award.

As shown by Table 6, the proportion of awards to teachers in total exceptional student education programs under the Tuition Reimbursement Program has dropped from 37 percent in 2004-05 to 27 percent in 2008-09. At the same time, the proportion of awards to teachers seeking certification or endorsement in reading now absorbs 34 percent of the awards.

Table 6
Tuition Reimbursement Awards By Category*

	Number					Percentage				
Shortage Area	2004-05	2005-06	2006-07	2007-08	2008-09	2004-05	2005-06	2006-07	2007-08	2008-09
Math	63	99	125	117	99	11.1%	14.0%	13.3%	13.8%	14.1%
Science	54	60	94	86	71	9.5%	8.5%	10.0%	10.1%	10.1%
Reading	175	239	333	277	236	30.8%	33.7%	35.5%	32.6%	33.7%
Foreign Languages	17	24	31	28	13	3.0%	3.4%	3.3%	3.3%	1.9%
ESOL	16	29	45	46	48	2.8%	4.1%	4.8%	5.4%	6.8%
Total ESE	210	219	255	257	188	36.9%	30.9%	27.2%	30.2%	26.8%
Technology Edu	17	21	22	19	19	3.0%	3.0%	2.3%	2.2%	2.7%
School Psychologist	17	18	32	20	27	3.0%	2.5%	3.4%	2.4%	3.9%
Other	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%
Total	569	709	937	850	701	100%	100%	100%	100%	100.0%

*Based on statistics compiled by the Office of Student Financial Assistance

The Critical Teacher Shortage Student Loan Forgiveness Program provides financial assistance to eligible Florida teachers by assisting them in the repayment of undergraduate and graduate educational loans that led to certification in a critical teacher shortage subject area. Eligible applicants may receive an annual award of up to $2,500 to repay undergraduate loans and $5,000 for two years to repay graduate loans for support of postsecondary education study. Participants may receive up to a maximum of $10,000 for the duration of the program.

For the 2008-09 award year, full-time teachers who were certified or licensed in,and taught in a critical teacher shortage area at least 180 days during the 2007-08 academic year, and who had educational loans and undergraduate degrees, received a maximum of $443, 18 percent of the maximum award. Those with graduate degrees received a maximum of $886, 18 percent of the maximum award.

Table 7 shows the numbers of Loan Forgiveness awards over the last five years. Most of the awards have gone to exceptional student education teachers, ranging from 71 percent in 2004-05 to 56 percent in 2008-09. The numbers of awards to teachers of math and science have increased to 18 percent and 15 percent of the total, respectively.

Table 7
Loan Forgiveness Awards By Category*

	Number					Percentage				
Shortage Area	2004-05	2005-06	2006-07	2007-08	2008-09	2004-05	2005-06	2006-07	2007-08	2008-09
Math	269	392	561	677	750	11.1%	13.0%	15.3%	16.8%	17.5%
Science	273	366	496	598	660	11.3%	12.1%	13.6%	14.9%	15.4%
Reading	15	34	80	110	134	0.6%	1.1%	2.2%	2.7%	3.1%
Foreign Languages	30	48	69	78	74	1.2%	1.6%	1.9%	1.9%	1.7%
ESOL	54	50	53	56	75	2.2%	1.7%	1.4%	1.4%	1.8%
Total ESE	1,723	2,032	2,258	2,320	2,377	71.3%	67.1%	61.8%	57.7%	55.6%
Technology Educ.	13	17	17	20	23	0.5%	0.6%	0.5%	0.5%	0.5%
School Psychologist	38	88	120	157	183	1.6%	2.9%	3.3%	3.9%	4.3%
Other	0	0	2	4	1	0.0%	0.0%	0.1%	0.1%	0.0%
Total	2,415	3,027	3,656	4,020	4,277	100%	100%	100%	100%	100.0%

Table 8 provides additional information on awards in both programs. Data indicate the following trends:

- Most of the science teachers receiving Loan Forgiveness awards are certified in middle grades science or biology, while fewer are in areas of the physical sciences—earth science, chemistry, or physics. Similarly, most Tuition Reimbursement awards are provided to teachers furthering their education in middle grades science or biology.
- Most Tuition Reimbursement awardees in reading are seeking certification in reading rather seeking a reading endorsement.
- Most of the awards to exceptional student education teachers go to those teaching in the large programs now collapsed into ESE.
- Critical teacher awards are particularly important to speech therapists, many of whom enter the classroom without a master's degree, a requirement for full certification in that field. Most of the awards to speech therapists are for loan forgiveness, as opposed to tuition reimbursement.

Table 8 Critical Teacher Shortage Awards By Certification Area* Reordered by Field										
Critical Teacher Shortage Area	2004-05		2005-06		2006-07		2007-08		2008-09	
	Loan Forgive.	Tuition Reimb.	Loan Forgive.	Tuition Reimb.	Loan Forgive.	Tuition Reimb.	Loan Forgive.	Tuition Reimb.	Loan Forgive.	Tuition Reimb.
Math - Middle Grades	113	23	180	41	248	49	301	48	337	47
Math - 6-12	156	40	212	58	313	76	376	69	413	52
Total Math	**269**	**63**	**392**	**99**	**561**	**125**	**677**	**117**	**750**	**99**
Science - Biology	111	22	155	27	203	41	260	37	314	29
Science - Middle Grades	114	22	147	23	197	37	219	37	220	31
Science - Chemistry	25	6	33	4	46	13	73	9	57	5
Science - Earth Science	9	3	12	4	25	1	32	3	52	5
Science - Physics	14	1	19	2	25	2	24	0	17	1
Total Science	**273**	**54**	**366**	**60**	**496**	**94**	**608**	**86**	**660**	**71**
Reading (Grades K-12)	15	149	34	205	80	290	110	243	134	200
Reading Endorsement	0	26	0	34	0	43	0	34	0	36
Total Reading	**15**	**175**	**34**	**239**	**80**	**333**	**110**	**277**	**134**	**236**
Spanish	20	13	36	20	52	24	63	18	5 5	8
French	8	3	10	4	13	4	12	2	12	0
Other Languages	2	1	2	0	4	5	2	6	7	5
Total Foreign Lang.	**30**	**17**	**48**	**24**	**69**	**33**	**77**	**26**	**74**	**13**
ESOL 54		15	50	17	53	32	56	26	75	27
ESOL Endorsement	0	1	0	12	0	13	0	20	0	21
Total ESOL	**54**	**16**	**50**	**29**	**53**	**45**	**56**	**46**	**75**	**48**
Middle Gr. nteg. Iurr C	**0**	**0**	**0**	**0**	**2**	**0**	**4**	**0**	**1**	**0**
Mentally Handicapped	83	1	59	2	90	2	84	2	67	0
Specific Learn. Disabled	165	4	171	2	172	5	109	5	103	2
Emotionally Handicapped	174	1	128	2	150	2	151	4	142	4
Varying Exceptionalities	629	26	803	24	832	22	913	15	614	5
Physically Impaired	2	0	4	1	5	0	8	0	10	0
Exceptional Student Educ.	365	98	543	137	604	156	624	155	1,050	137
Speech - Lang. Impaired	250	41	253	26	298	43	290	33	277	24
Hearing Impaired	18	3	23	1	28	2	32	0	29	0
Visually Impaired	10	1	8	0	12	4	13	1	12	1
Orientation Mobil&y	0	0	0	0	0	0	0	1	0	0
Autism Spectrum Disorders	26	0	40	2	67	3	96	9	73	3
Severe r rofouRd andi. H	0	0	0	0	0	0	0	2	0	1
Pre-K Handicapped	0	0	0	3	0	3	0	6	0	5
Gifted	0	35	0	19	0	13	0	24	0	6
Total ESE	**1,722**	**210**	**2,032**	**219**	**2,258**	**255**	**2,320**	**257**	**2,377**	**188**
Industrial Arts/Tech. Educ	**13**	**17**	**17**	**21**	**17**	**22**	**20**	**19**	**23**	**19**
School Psychologist	**38**	**17**	**88**	**18**	**120**	**32**	**157**	**20**	**183**	**27**
Total Disbursed Count	**2,414**	**569**	**3,027**	**709**	**3,656**	**937**	**4,020**	**850**	**4,277**	**701**

*Based on statistics compiled by the Office of Student Financial Assistance

Teacher Supply – Teacher Education Completers by Sector

For many years statistics on teacher education completers have been based exclusively on a survey completed each year by the education deans and chairpersons of the Florida colleges and universities (public and private) with approved teacher education programs.

The report now also includes information on completers of district alternative certification programs, community college baccalaureate programs in education, and community college and university Educator Preparation Institutes (EPI). EPI programs are alternative certification programs specifically designed for non-education baccalaureate degree holders to enable them to meet educator certification requirements.

Table 9 summarizes the number of teacher education completers in each of these programs. In 2007-08 the traditional teacher education programs supplied 66 percent of the total number of completers, down from 86 percent in 2004-05. EPI programs now account for 16 percent of the total and district programs 18 percent. Altogether, the number of completers has increased from 6,300 in 2004-05 to 9,200 in 2007-08. Projections for 2009-10 total 10,000, with the largest percentage increase in community college baccalaureate and EPI programs.

Table 9
Number of Teacher Education Completers by Sector
All Fields Except Educational Leadership

Sector	Actual				Projected*	
	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
SUS	4,168	4,106	4,507	4,463	4,579	4,666
Privates	1,170	1,313	1,241	1,238	1,113	1,224
CC Bacc	102	178	215	259	269	553
Total	5,440	5,597	5,963	5,960	5,961	6,443
SUS EPI			24	94	196	206
CC EPI		86	715	1,321	1,726	1,726
Total**	0	86	739	1,415	1,922	1,932
District Alt. Cert.	887	1,314	1,508	1,650	1,654	1,660
Total	6,327	6,997	8,210	9,025	9,537	10,035

Sector	Percentages					
	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
SUS	65.9%	58.7%	54.9%	49.5%	48.0%	46.5%
Privates	18.5%	18.8%	15.1%	13.7%	11.7%	12.2%
CC Bacc	1.6%	2.5%	2.6%	2.9%	2.8%	5.5%
Total	86.0%	80.0%	72.6%	66.0%	62.5%	64.2%
SUS EPI			0.3%	1.0%	2.1%	2.1%
CC EPI		1.2%	8.7%	14.6%	18.1%	17.2%
Total	0.0%	1.2%	9.0%	15.7%	20.2%	19.3%
District Alt. Cert.	14.0%	18.8%	18.4%	18.3%	17.3%	16.5%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

SUS=State Universities CC=Community Colleges
Privates=Private Colleges and Universities
CC Bacc=Community College Baccalaureate Programs
EPI=Educator Preparation Institutes
Alt. Cert - School District Alternative Certification Programs

*The 2008-09 and 2009-10 numbers shown for state universities, private colleges and universities, and community college programs are projections made by the institutions. EPI numbers for 2008-09 are based on final actual reports, while the 2008-09 Alt Cert numbrs are the preliminary actual number. In absence of official projections, the Alt Cert number shown for 2009-10 is a place-holder.

**Note that the totals may be slightly different than reported elsewhere in that (1) this report is based on unduplicated counts and (2) the numbers shown include completers of speech pathology programs, not typically reported by university colleges of education, the source of the numbers of completes in other teacher education programs.

The distribution by sector varies across subject fields. Table 10 shows that traditional teacher education programs produce two-thirds of the completers in exceptional student education and almost three fourths of the completers in reading. On the other hand, two thirds or more of the graduates in the core subjects of English, math, science, and foreign languages enter the classroom via district and EPI programs.

Table 10
Teacher Education Program Completers - 2007-08
Critical Teacher Shortage Areas

	Number by Sector						
Subject Field	SUS	SUS EPI	CC BS	CC EPI*	Priv.	Dist.Alt Cert*	Total
English/Lang. Arts	172	6	0	118	25	237	558
Math	111	18	32	145	16	227	549
Science	70	11	21	121	11	153	387
Reading	205	5	0	51	120	59	440
Foreign Languages	19	2	0	26	0	43	90
ESOL	0			2		12	14
Industrial Arts/Tech. Educ	1	1	0	5		3	10
ESE	372	2	117	123	119	161	894
Speech Impaired	91	0	0	0	1	0	92
Hearing Impaired	7	0	0	0	0	1	8
Visually Impaired	8	0	0	0	0	1	9
Autism	0	0	0	7	0	18	25
PreK Handicapped	26	0	0	7	1	1	35
Gifted	6	0	0	11	0	8	25
Exceptional Other	40	0	0	2	58	0	100
Total Exceptional	550	2	117	150	179	190	1,188
	Percentage Total						
English/Lang. Arts	30.8%	1.1%	0.0%	21.1%	4.5%	42.5%	100.0%
Math	20.2%	3.3%	5.8%	26.4%	2.9%	41.3%	100.0%
Science	18.1%	2.8%	5.4%	31.3%	2.8%	39.5%	100.0%
Reading	46.6%	1.1%	0.0%	11.6%	27.3%	13.4%	100.0%
Foreign Languages	21.1%	2.2%	0.0%	28.9%	0.0%	47.8%	100.0%
ESOL	0.0%	0.0%	0.0%	14.3%	0.0%	85.7%	100.0%
Industrial Arts/Tech. Educ	10.0%	10.0%	0.0%	50.0%	0.0%	30.0%	100.0%
ESE	41.6%	0.2%	13.1%	13.8%	13.3%	18.0%	100.0%
Speech Impaired	98.9%	0.0%	0.0%	0.0%	1.1%	0.0%	100.0%
Hearing Impaired	87.5%	0.0%	0.0%	0.0%	0.0%	12.5%	100.0%
Visually Impaired	88.9%	0.0%	0.0%	0.0%	0.0%	11.1%	100.0%
Autism	0.0%	0.0%	0.0%	28.0%	0.0%	72.0%	100.0%
PreK Handicapped	74.3%	0.0%	0.0%	20.0%	2.9%	2.9%	100.0%
Gifted	24.0%	0.0%	0.0%	44.0%	0.0%	32.0%	100.0%
Exceptional Other	40.0%	0.0%	0.0%	2.0%	58.0%	0.0%	100.0%
Total Exceptional	46.3%	0.2%	9.8%	12.6%	15.1%	16.0%	100.0%

*Distribution by subject field for Alt Cert and EPI based on the completers who were teaching in 2007 or 2008.

Teacher Supply and Projected Shortages for 2010-11

Recent completers are only one source of "new" teachers. Other sources include returning teachers and teachers moving from one district to another. Nevertheless, a comparison of the number of newly-minted teachers and projected vacancies is an important indicator of shortages. Table 11 compares (a) the number of Florida teacher education completers for 2007-08 and the projected number for 2009-10 (Columns 1 and 4), with (b) the number of new hires in fall 2008 (Column 2) and the projected number in 2010-11 (Column 5).

The projected need in 2010-11 includes vacancies due to teacher resignations and retirements, and the additional teachers needed to meet class size targets at the classroom level. Columns 3 and 6 show the numbers of teacher education completers as percentages of the numbers of new hires.

Among the critical shortage fields, Table 11 shows:

- The number of completers in 2007-08 totaled 68 percent of the number of new hires in fall 2008. The projected number of completers in 2009-10 represents 44 percent of the projected need in 2010-11, a drop of 24 percentage points.
- The number of completers as a percentage of teachers needed in total ESE is projected to decrease from 74 percent of the need (column 3) to 54 percent (column 6).
- Other subject fields show a similar decrease, with the gap between supply and demand widest in foreign languages, technology education, and science.

Table 11
Comparison of New Hires and Florida Teacher Education Completers

Subjects	1 Teacher Education Completers 2007-08	2 New Hires Fall 2008	3 Completers as a % of New Hires (1/2)	4 Projected Florida Education Completers 2009-10	5 Projected Number Positions To Be Filled 2010-11	6 Completers as a % of Positions To Be Filled (4/5)
English/Lang. Arts	558	846	66%	615	1,571	39%
Math	549	729	75%	657	1,585	41%
Science	387	771	50%	462	1,399	33%
Reading	440	403	109%	552	670	82%
Foreign Languages	90	273	33%	97	557	17%
ESOL*	14	113	12%	14	283	5%
Industrial Arts/Tech. Educ	10	32	31%	12	41	29%
Exceptional Student Education						
ESE	890	1,053	85%	1,114	1,838	61%
Speech Impaired	92	194	47%	94	237	40%
Hearing Impaired	8	20	40%	9	38	24%
Visually Impaired	9	9	100%	11	12	92%
Autistic	25	111	23%	27	104	26%
Occup./Physical Therapy		19	-	-	22	-
PreK Handicapped	35	59	59%	43	160	27%
Gifted	25	77	32%	27	130	21%
Excep. Other & Dual Program	100	58	-	74	56	132%
Total Exceptional	1,184	1,600	74%	1,399	2,597	54%
Total Above Fields	3,232	4,767	68%	3,808	8,703	44%

*In addition to completers in ESOL programs, a number of other programs include endorsement in ESOL.

CRITICAL TEACHER SHORTAGE AREAS
FOR THE YEARS 1984-85 – 2010-11

1984-85	Math, science, speech therapy, emotionally handicapped, industrial arts, foreign languages
1985-86 1986-87	Math, science, emotionally handicapped, English, foreign languages
1987-88	Math, science, emotionally handicapped, foreign languages
1988-89	Math, science, emotionally handicapped, English, foreign languages
1989-90 1990-91 1991-92	Middle and secondary level science, math, and English; foreign languages; and exceptional student education programs serving the handicapped.
1992-93	Middle and secondary level math and physical sciences; English for speakers of other languages (ESOL); exceptional student education programs
1993-94 1994-95 1995-96	Exceptional student education programs; ESOL
1996-97 1997-98 1998-99 1999-00	Same as 1995-96: (Exceptional student education programs; ESOL), with the addition of technology education/industrial arts
2000-01	Same as 1999-2000: (Exceptional student education programs; ESOL, and technology education/industrial arts), with the addition of middle and secondary mathematics and science
2001-02	Same as 2000-01: (Exceptional student education programs; ESOL, technology education/industrial arts, middle and secondary mathematics and science), with the addition of foreign languages
2002-03	Same as 2001-02: (Exceptional student education programs; ESOL, technology education/industrial arts, middle and secondary mathematics and science, and foreign languages) with the addition of reading and school psychologists
2003-04, 2004-05 2005-06, 2006-07 2007-08	Same as 2002-03: middle and high school level mathematics, middle and high school level science, reading, exceptional student education programs, English for speakers of other languages (ESOL), foreign languages, school psychologists, and technology education/industrial arts.
2008-09	Same as 2007-08: middle and high school level mathematics, middle and high school level science, reading, exceptional student education programs, English for speakers of other languages (ESOL), foreign languages, and technology education/industrial arts, with the addition of middle and high school level English/language arts, and the deletion of school psychologists.
2009-10 2010-11	Same as 2008-09: middle and high school level mathematics, middle and high school level science, middle and high school level English/language arts, reading, exceptional student education programs, English for speakers of other languages (ESOL), foreign languages, and technology education/industrial arts.

D1-3: Rule 6A-5.080, F.A.C., *Florida Principal Leadership Standards*

Florida's school leaders must possess the abilities and skills necessary to perform their designated tasks in a high-performing manner. The school leader, commensurate with job requirements and delegated authority, shall demonstrate competence in the following standards:

(1) Instructional Leadership.

(a) Instructional Leadership. High performing leaders promote a positive learning culture, provide an effective instructional program and apply best practices to student learning, especially in the area of reading and other foundational skills.

(b) Managing the Learning Environment. High performing leaders manage the organization, operations, facilities and resources in ways that maximize the use of resources in an instructional organization and promote a safe, efficient, legal and effective learning environment.

(c) Learning, Accountability and Assessment. High performing leaders monitor the success of all students in the learning environment; align the curriculum, instruction and assessment processes to promote effective student performance; and use a variety of benchmarks, learning expectations and feedback measures to ensure accountability for all participants engaged in the educational process.

(2) Operational Leadership.

(a) Decision Making Strategies. High performing leaders plan effectively, use critical thinking and problem solving techniques, and collect and analyze data for continuous school improvement.

(b) Technology. High performing leaders plan and implement the integration of technological and electronic tools in teaching, learning, management, research and communication responsibilities.

(c) Human Resource Development. High performing leaders recruit, select, nurture and, where appropriate, retain effective personnel; develop mentor and partnership programs; and design and implement comprehensive professional growth plans for all staff, paid and volunteer.

(d) Ethical Leadership. High performing leaders act with integrity, fairness, and honesty in an ethical manner.

(3) School Leadership.

(a) Vision. High performing leaders have a personal vision for their school and the knowledge, skills and dispositions to develop, articulate and implement a shared vision that is supported by the larger organization and the school community.

(b) Community and Stakeholder Partnerships. High performing leaders collaborate with families and business and community members, respond to diverse community interests and needs, work effectively within the larger organization and mobilize community resources.

(c) Diversity. High performing leaders understand, respond to, and influence the personal, political, social, economic, legal, and cultural relationships in the classroom, the school and the local community.

Standards for Initial and Continued Approval of School Principal Preparation Programs

September 2007

These standards and associated criteria reflect statutory requirements of section 1012.986, Florida Statutes, and revisions to Chapter 6A-5.081, F.A.C., adopted by the Florida State Board of Education in May 2007. Additional information concerning the program approval process may be obtained through the Educator Retention Program Section of the Bureau of Educator Recruitment, Development and Retention, 850.245.0435.

Standard 1. Core Curriculum Content
The curriculum content delivered in each approved program is based on competencies aligned with the Florida Principal Leadership Standards and includes all other state-mandated requirements.

Criteria for Initial Program Approval in Standard One	Criteria for Continued Program Approval in Standard One
1. The Florida Principal Leadership Standards and competencies are translated into a customized, competency-based developmental program that is tailored to the needs of aspiring principals	1. The Florida Principal Leadership Standards and competencies are consistently implemented in a customized, competency-based preparation program that is tailored to the needs of aspiring principals
1.1.1 The overall competency-based design for the preparation program is aligned with the Florida Principal Leadership Standards and competencies	1.1.1 The overall competency-based design for the preparation program is aligned with the Florida Principal Leadership Standards and competencies
1.1.2 The program design places greatest emphasis on the role of the school leader in improving curriculum, instruction and student achievement	1.1.2 The program design continues to place the greatest emphasis on the role of the school leader in improving curriculum, instruction and student achievement
1.1.3 Customized competency-based learning plans are developed for aspiring principals using valid data gathered from self-assessment, selection, and appraisal instruments aligned with the competencies to be demonstrated in the program	1.1.3 The program documents the use of customized competency-based learning plans that are developed for aspiring principals using valid data gathered from self-assessment, selection, and appraisal instruments aligned with the competencies to be demonstrated in the program

1.1.4 These customized learning plans include competency-based professional development opportunities and job-embedded learning experiences appropriate to the preparation needs of aspiring principals	1.1.4 The program documents that customized learning plans include competency-based professional development opportunities and job-embedded learning experiences appropriate to the preparation needs of aspiring principals
1.1.5 A qualified, experienced leadership team, including a high performing principal, guides and supervises aspiring principals during their preparation	1.1.5 The program documents that a qualified, experienced leadership team, including a high performing principal, guides and supervises aspiring principals during their preparation
2. The program provides learning opportunities and experiences that foster the understanding and application of competencies aligned with each of the Principal Leadership Standards and incorporate appropriate elements of the William Cecil Golden School Leadership Development Program	2. Program learning opportunities and experiences are reviewed and updated regularly to foster the understanding and application of competencies aligned with each of the Florida Principal Leadership Standards and incorporate appropriate elements of the William Cecil Golden School Leadership Development Program
1.2.1 Program learning opportunities and experiences are designed to ensure mastery of competencies for improving student learning	1.2.1 Program learning opportunities and experiences are documented and reviewed to ensure mastery of competencies for improving student learning
1.2.2 Aspiring principals are engaged in solving on-the-job problems with greatest emphasis on the school leaders' roles in improving curriculum, instruction, and student achievement	1.2.2 The program documents that aspiring principals are engaged in solving on-the-job problems with greatest emphasis on the school leaders' roles in improving curriculum, instruction, and student achievement
1.2.3 Program learning opportunities and experiences include a plan for candidates to utilize the resources and tools of the William Cecil Golden Program for School Leaders	1.2.3 Program learning opportunities and experiences provide evidence that candidates utilize the resources and tools of the William Cecil Golden Program for School Leaders

3. Field experiences are designed and implemented to provide opportunities for aspiring principals to apply program knowledge and demonstrate required leadership competencies	3. Field experiences provide opportunities for aspiring principals to apply program knowledge and demonstrate required leadership competencies
1.3.1 Field experiences are integrated with professional preparation	1.3.1 The program provides field experiences that are integrated with professional preparation
1.3.2 Field experiences are designed to provide application, practice, and reflection on concepts skills, and procedures essential for leading school improvement and improving student achievement	1.3.2 Field experiences provide application, practice, and reflection on concepts skills, and procedures essential for leading school improvement and improving student achievement
1.3.3 Aspiring principals receive feedback and coaching on their performance of essential competencies during their field experiences	1.3.3 The program insures that aspiring principals receive feedback and coaching on their performance of essential competencies during their field experiences
4. Program learning opportunities are delivered and field experiences are supervised by qualified personnel	4. Program learning opportunities are delivered and field experiences are supervised by qualified personnel
1.4.1 Program staff have the appropriate educational background and school experiences to deliver the required learning opportunities effectively	1.4.1 The program documents that staff have the appropriate educational background and school experiences to deliver the required learning opportunities effectively
1.4.2 Candidates' field experiences are supervised by principals who have dealt successfully with the issues and/or problems being addressed	1.4.2 Candidates' field experiences are supervised by principals who have dealt successfully with the issues and/or problems being addressed
1.4.3 Valid techniques have been developed to obtain candidates' feedback on the quality of the overall experience and to share the feedback with program staff to improve program quality	1.4.3 Valid techniques are used to obtain candidates' feedback on the quality of the overall experience and this feedback is shared with program staff to improve program quality

Standard 2. Candidate Performance Each candidate in the approved program will demonstrate all competencies identified in Statute and Rule.	
Criteria for Initial Program Approval in Standard Two	**Criteria for Continued Program Approval in Standard Two**
1. Methods and procedures aligned with the required curriculum have been established to assess aspiring principals' mastery of program competencies as they progress through their preparation program	1. Methods and procedures that are aligned with the required curriculum are used to assess aspiring principals' mastery of program competencies as they progress through their preparation program
2.1.1 Accurate assessments are being utilized to assess aspiring principals' mastery of required curriculum competencies as they progress through their preparation program	2.1.1 The program documents that accurate assessments are being utilized to assess aspiring principals' mastery of required curriculum competencies as they progress through their preparation program
2.1.2 Results from these assessments are used to a) provide aspiring principals with feedback on their strengths as well as areas where improvement is needed b) track their progress in meeting the performance expectations for the preparation program, and c) create a remediation plan and timeline where needed	2.1.2 Results from these assessments are used to a) provide aspiring principals with feedback on their strengths as well as areas where improvement is needed b) track their progress in meeting the performance expectations for the preparation program, and c) create a remediation plan and timeline where needed
2.1.3 A Committee made up of school district staff and higher education institution and/or other out of district qualified persons is established to review candidates' progress on assessments to identify any individuals who are not making adequate progress in mastering the competencies of the school principal	2.1.3 A Committee made up of school district staff and higher education institution and/or other out of district qualified persons review candidates' progress on assessments to identify any individuals who are not making adequate progress in mastering the competencies of the school principal
2.1.4 All assessments are developed collaboratively and are tied to the Florida Leadership Standards, district developed competencies and the comprehensive duties of the school principal	2.1.4 All assessments are developed collaboratively and are tied to the Florida Leadership Standards, district developed competencies and the comprehensive duties of the school principal
2. A process has been developed to determine and record which candidates have successfully demonstrated mastery of all required preparation program competencies and, thus, can be endorsed for School Principal Certification	2. A process is in place to determine and record which candidates have successfully demonstrated mastery of all required preparation program competencies and, thus, can be endorsed for School Principal Certification
2.2.1 Candidates' mastery of the required preparation program competencies is recorded on an ongoing basis.	2.2.1 Candidates' mastery of the required preparation program competencies is recorded on an ongoing basis.

2.2.2 A plan is established by which a team of school district leaders and institutions of higher education and/or other non-district qualified persons review each candidate to determine successful completion of the principal preparation program	2.2.2 A team of school district leaders and institutions of higher education and/or other non-district qualified persons review each candidate to determine successful completion of the principal preparation program
3. Methods and processes are in place to support and assess program completer's impact on school improvement and student learning using student achievement data during their first year as a school principal.	3. Completers demonstrate impact on school improvement and student learning using student achievement data during their first year as a school principal.
2.3.1 An accurate process has been developed to support and assess program completers' impact on school improvement and student learning using student achievement data	2.3.1 An accurate process is used to support and assess program completers' impact on school improvement and student learning using student achievement data
2.3.2 Data collected through this process are compiled and used in the design and delivery of a professional development program focused on strengthening and/or enhancing program completers' performance as a school principal	2.3.2 Data collected through this process are compiled and used in the design and delivery of a professional development program focused on strengthening and/or enhancing program completers' performance as a school principal
4. A process is in place to provide assistance to program completers who do not meet their school district's performance expectations during their first two years as a school principal.	4. The program documents the assistance and the results of the assistance provided to program completers who do not meet their school district's performance expectations in their first two years as a school principal.
2.4.1 A process has been developed to identify program completers who have not met their school district's performance expectations as a school principal	2.4.1 A process is used to identify program completers who have not met their school district's performance expectations as a school principal
2.4.2 A process is in place for a team of school district leaders and institution of higher education staff and/or other out-of-district qualified persons to recommend what additional assistance might be provided	2.4.2 A process is used for a team of school district leaders and institution of higher education staff and/or other out-of-district qualified persons to recommend what additional assistance might be provided
2.4.3 The results of the actions taken are documented	2.4.3 The results of the actions taken are documented

Standard 3. Continuous Improvement

The approved program implements processes to ensure continuous program improvement.

Criteria for Initial Program Approval in Standard Three	Criteria for Continued Program Approval in Standard Three
1. A formal process is in place for continually monitoring whether the principal preparation program is being implemented as designed and the desired outcomes are being achieved	1. Continuous improvement across and within the program is the result of ongoing analysis of data collected on program content; admission, enrollment, and completion status of each candidate; and results of recent faculty experiences.
3.1.1 A systematic process has been developed to continuously monitor the program's performance	3.1.1 A systematic process is used to continuously monitor the program's performance
3.1.2 School district staff review and use the results of this process to refine the design and delivery of the program to meet quality standards	3.1.2 School district staff review and use the results of this process to refine the design and delivery of the program to meet quality standards
2. A formal process has been established to determine how satisfied the school district is with the level of preparedness of program completers for their first year as a school principal	2. A formal process is used to determine how satisfied the school district is with the level of preparedness of program completers for their first year as a school principal
3.2.1 A formal process has been developed to determine how satisfied the school district is with the level of preparedness of program completers	3.2.1 A formal process has been developed and used to documented how satisfied the school district is with the level of preparedness of program completers
3.2.2 School district staff review and use the results of this process to refine the design and delivery of the program to meet quality standards	3.2.2 School district staff review and use the results of this process to refine the design and delivery of the program to meet quality standards
3. A formal process has been established to determine how satisfied program completers are with their level of preparedness for their first year as a school principal.	3. Program completers indicate satisfaction with the level of preparedness for their first year as a school principal.
3.3.1 A formal process has been developed to determine how satisfied program completers are with their preparedness	3.3.1 A formal process has been developed and is used to determine how satisfied program completers are with their preparedness

3.3.2 School district staff review and use the results of this process to refine the design and delivery of the program to meet quality standards	3.3.2 School district staff review and use the results of this process to refine the design and delivery of the program to meet quality standards

D2-1: 2008-09 LEARNING GAINS IN READING AND MATH

2008-09 Teacher Performance Based on Percentages of Students Making Learning Gains in Reading and Mathematics

	Teachers	Number of Teachers with MORE THAN 50% of Students Making Learning Gains	Percent of Teachers with MORE THAN 50% of Students Making Learning Gains	Number of Teachers with 75% OR MORE of Students Making Learning Gains	Percent of Teachers with 75% OR MORE of Students Making Learning Gains	Number of Teachers with 80% OR MORE of Students Making Learning Gains	Percent of Teachers with 80% OR MORE of Students Making Learning Gains	Number of Teachers with 90% OR MORE of Students Making Learning Gains	Percent of Teachers with 90% OR MORE of Students Making Learning Gains
Elem Reading	18712	17000	91	7806	42	5127	27	1266	7
Elem ESE Rdg	1666	1042	63	305	8	209	3	8	3
Elem Math	16766	13824	82	5988	36	4056	24	1187	7
Elem ESE Math	1131	634	56	183	6	128	1	4	4
Middle Reading	10996	10149	92	2755	25	1287	12	192	2
Middle ESE Reading	1730	1244	72	271	6	159	9	0	2
Middle Math	7245	6088	84	3510	48	2475	34	519	7
Middle ESE Math	1154	721	62	199	7	124	1	3	4
High Reading	8419	3189	38	394	5	195	2	19	0
High ESE Reading	820	92	11	7		6	1 0		
High Math	6199	5736	93	3144	51	2075	33	361	6
High ESE Math	632	347	55	61	10	41	9 1		
Reading	38127	30338	80	10955	29	6609	17	1477	4
Reading ESE	4216	2378	56	583	4	374	9	9	2
Math	30210	25648	85	12642	42	8606	28	2067	7
Math ESE	2917	1702	58	443	5	293	0	6	3

D2-1: 2008-09 LEARNING GAINS IN READING AND MATH

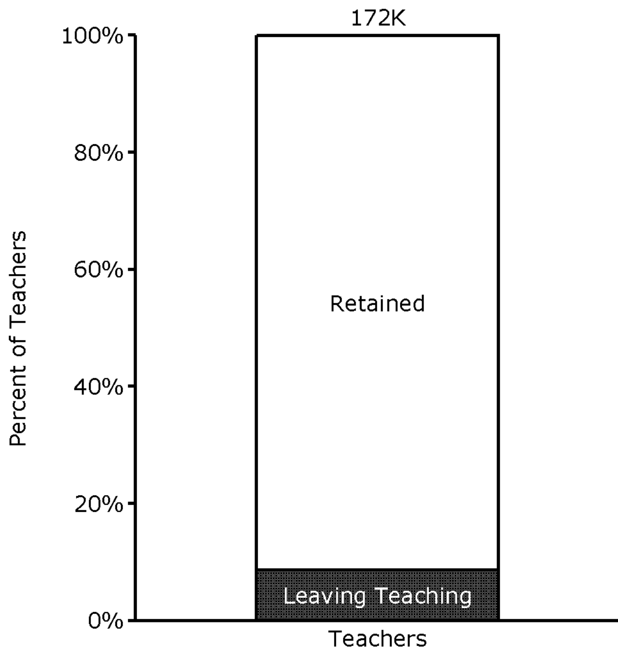
Teacher Performance in Reading and Mathematics Based on Learing Gains Percentages by School Type

School Type	Percent of Reading Teachers with 60% OR MORE of Students Making Learning Gains	Percent of Reading Teachers with 80% OR MORE of Students Making Learning Gains	Percent of Math Teachers with 60% OR MORE of Students Making Learning Gains	Percent of Math Teachers with 80% OR MORE of Students Making Learning Gains
Low Poverty Schools	75%	28%	85%	41%
High Poverty Schools	64%	15%	64%	21%
Low Minority Schools	72%	21%	77%	32%
High Minority Schools	57%	14%	68%	23%
Both High Minority and High Poverty Schools	63%	15%	65%	22%
Both Low Minority and Low Poverty Schools	78%	29%	85%	40%

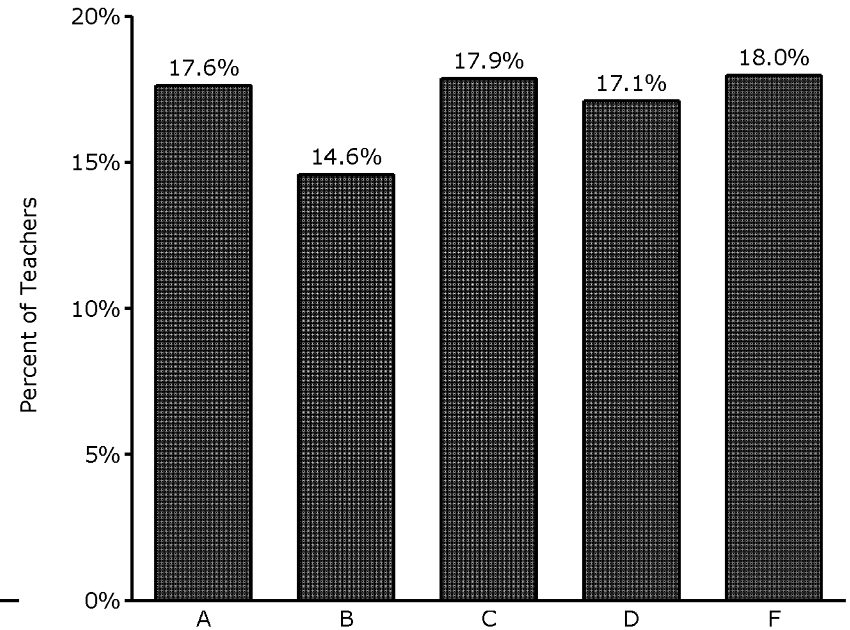
D2-2: RATE OF TEACHERS EXITING THE SYSTEM

Nearly 10% of the Florida Teaching Population Leaves Annually, Worst Performing Teachers Do Not Exit at a Higher Rate

Classroom Teachers Leaving Teaching, 2007-2008



Percent of Teachers Leaving Scoring One St. Dev Below Average, 2007-2008



	A	B	C	D	F
Total % 1 St. Dev. Below	14.7%	14.0%	17.1%	16.6%	16.7%
Percent Leaving	8.0%	8.4%	8.0%	9.0%	9.7%

Note: School grade is previous year's school grade
Source: Florida DOE

D3-1: Teacher Performance and Title I and Non-Title I Schools

Overall Teacher Performance in Reading and Math Combined in Title I and Non-Title I Schools 2008-09

Three Thresholds:

1. 50% or more of students making learning gains
2. 75% or more of students making learning gains
3. Value Table score of 125 or higher (placing teacher in about the top 20% of teachers in the state)

School Type	Total Number of Teachers	Number of Teachers at 50% LG Mark	Percent of Teachers at 50% LG Mark	Number of Teachers at 75% LG Mark	Percent of Teachers at 75% LG Mark	Number of Teachers at 125 VT or Higher	Percent of Teachers at 125 VT or Higher
Title I	27,342	22,448	82.1	7,803	28.5	4,640	17
Non-Title I	48,128	39,487	82.0	16,820	34.9	12,682	26.4

D4-1a: Data on student performance of completers of Florida's teacher preparation programs (ranked)

Initial Teacher Preparation Programs (ITPs)	Average Value Table Score (100 is average)	Total Number of Teachers Identified	Percent of Teacher with a Value Table Score of 125 or Higher
Florida Southern College	**100.3**	10	**30.0%**
FIU	**99.5**	81	**25.9%**
Florida Memorial University	97.2	15	13.3%
University of Miami	96.6	19	15.8%
FGCU 95.4		78	**20.5%**
FSU 95.0		99	**20.2%**
UF 94.6		89	18.0%
UNF 94.5		94	**22.3%**
FAU 93.5		**194 20.1%**	
UCF 92.0		**239**	17.6%
Nova Southeastern University	91.9	**229**	18.3%
Saint Leo University	91.7	86	17.4%
Barry University	91.6	65	**20.0%**
Stetson University	90.3	37	18.9%
USF 88.4		342	13.2%
Southeastern University	87.4	15	0.0%
St. Petersburg College	87.2	57	15.8%
University of Tampa	86.9	15	0.0%
FAMU 80.8		25	12.0%
UWF 77.5		78	12.8%
Miami-Dade College	76.4	25	12.0%
Flagler College	70.2	39	15.4%
Bethune Cookman University	*	6	*
Chipola College	*	9	*
Florida Institute of Technology	*	1	*
Jacksonville University	*	2	*
Lynn University	*	3	*
Palm Beach Atlantic University	*	5	*
Rollins College	*	2	*
Warner Southern University	*	4	*
ITP Results	**90.7**	**1,963**	**17% (=339)**
Based on FCAT scores between 2008 and 2009 for teachers teaching Reading/Language Arts and Math in Grades 4-10			
*Fewer than 10 teachers with sufficient data to calculate a value table score			

D4-1a: Data on student performance of completers of Florida's teacher preparation programs (ranked)

Educator Preparation Institutes (EPIs)	Average Value Table Score (100 is average)	Total Number of Teachers Identified	Percent of Teacher with a Value Table Score of 125 or Higher
Brevard Community College	**120.3**	18	**38.9%**
Miami-Dade College	**103.4**	17	**23.5%**
Manatee Community College	**101.6**	16	**31.3%**
Lake-Sumter Community College	**101.2**	14	**21.4%**
Valencia Community College	98.0	17	17.6%
Florida Comm. Coll. at Jacksonville	97.5	**29 24.1%**	
Broward Community College	95.9	14	**21.4%**
Central Florida Community College	93.6	14	7.1%
Edison College	93.1	19	**21.1%**
Indian River Community College	92.9	**27**	11.1%
Polk Community College	89.5	**39**	17.9%
Okaloosa-Walton College	88.7	14	**21.4%**
Pasco Hernando Community College	88.5	19	15.8%
Palm Beach Community College	86.8	13	7.7%
St. Petersburg College	83.5	23	17.4%
Daytona Beach Community College	71.8	24	4.2%
Gulf Coast Community College	*	9	*
Hillsborough Community College	*	4	*
Lake City Community College	*	3	*
North Florida Community College	*	6	*
Pensacola Junior College	*	9	*
Santa Fe Community College	*	7	*
Seminole Community College	*	3	*
St. Johns River Community College	*	4	*
Tallahassee Community College	*	4	*
UF *		9	*
UWF *		5	*
EPI Results	**92.2**	**380**	**18% (=70)**

Based on FCAT scores between 2008 and 2009 for teachers teaching Reading/Language Arts and Math in Grades 4-10

*Fewer than 10 teachers with sufficient data to calculate a value table score

D4-1a: Data on student performance of completers of Florida's teacher preparation programs (ranked)

District Alternative Certification Programs	Average Value Table Score (100 is average)	Total Number of Teachers Identified	Percent of Teacher with a Value Table Score of 125 or Higher
Seminole	**108.0**	11 18.2%	
Manatee	**103.1**	14	**21.4%**
Dade 97.2		**85**	12.9%
Duval 95.2		51	15.7%
Hillsborough 93.4		**134**	18.7%
Orange 92.3		**104**	11.5%
Pasco 91.0		52	**21.2%**
Lee 90.8		16	12.5%
Palm Beach	90.1	18	11.1%
Bay 88.1		15	13.3%
Escambia 80.7		36	16.7%
Pinellas 76.9		37	13.5%
Polk 69.3		38	5.3%
Wakulla *		1	*
Volusia *		9	*
UF Lab School	*	1	*
Sumter *		3	*
St. Lucie	*	6	*
St. Johns	*	1	*
Sarasota *		3	*
Santa Rosa	*	8	*
Putnam *		1	*
Osceola *		1	*
Okeechobee *		1	*
Okaloosa *		6	*
Monroe *		1	*
Marion *		2	*
Liberty *		4	*
Lake *		4	*
Indian River	*	1	*
Highlands *		7	*
Hernando *		3	*
Hendry *		5	*
Hardee *		9	*
FSU Lab School	*	2	*
Dixie *		1	*
DeSoto *		6	*
Collier *		4	*
Clay *		4	*
Citrus *		2	*
Broward *		7	*
Brevard *		7	*
Bradford *		2	*
DACP Results	**90.9**	**723**	**16% (=114)**
Based on FCAT scores between 2008 and 2009 for teachers teaching Reading/Language Arts and Math in Grades 4-10			
*Fewer than 10 teachers with sufficient data to calculate a value table score			

D4-1b: Data on student performance of completers of Florida's teacher preparation programs

	Percent of teachers that had 50% or more of their students making learning gains			Percent of teachers that had 75% or more of their students making learning gains			Percent of "High Performing" teachers (based on a Value Table Score of 125, where 100 is average)			Average Value Table Score (100 is average)		
Institution Initia	1 Teacher Preparation Programs (ITP)	Educator Preparation Insititutes (EPI)	District Alternative Certification (DAC)	Initial Teacher Preparation Programs (ITP)	Educator Preparation Insititutes (EPI)	District Alternative Certification (DAC)	Initial Teacher Preparation Programs (ITP)	Educator Preparation Insititutes (EPI)	District Alternative Certification (DAC)	Initial Teacher Preparation Programs (ITP)	Educator Preparation Insititutes (EPI)	District Alternative Certification (DAC)
State University System												
FAMU 64%		N/A	N/A 20%		N/A	N/A 12%		N/A	N/A 80.	8	N/A	N/A
FAU	**84%**	N/A	N/A	**34%**	N/A	N/A	**20%**	N/A	N/A 93.	5	N/A	N/A
FGCU	**91%**	N/A	N/A	**33%**	N/A	N/A	**21%**	N/A	N/A 95.	4	N/A	N/A
FIU	**81%**	N/A	N/A	**38%**	N/A	N/A	**26%**	N/A	N/A 99.	5	N/A	N/A
FSU	**85%**	N/A	N/A	**33%**	N/A	N/A	**20%**	N/A	N/A 95.	0	N/A	N/A
UCF	**82%**	N/A	N/A 25%		N/A	N/A 18%		N/A	N/A 92.	0	N/A	N/A
UF	**82%**	*	N/A 27%		*	N/A 18%		*	N/A 94.6		*	N/A
UNF	**80%**	N/A	N/A	**41%**	N/A	N/A	**22%**	N/A	N/A 94.	5	N/A	N/A
USF	**82%**	N/A	N/A 25%		N/A	N/A 13%		N/A	N/A 88.	4	N/A	N/A
UWF 69%		*	N/A 19%		*	N/A 13%		*	N/A 77.5		*	N/A
Florida College System												
Brevard Community College	N/A	**89%**	N/A N/A		**50%**	N/A N/A		**39%**	N/A N/A		**120.3**	N/A
Broward Community College	N/A	**86%**	N/A N/A		21%	N/A N/A		**21%**	N/A N/A		95.9	N/A
Central Florida Community College	N/A	**93%**	N/A N/A		14%	N/A N/A		7%	N/A N/A		93.6	N/A
Chipola College	*	N/A	N/A *		N/A	N/A *		N/A	N/A *		N/A	N/A
Daytona Beach Community College	N/A 63%		N/A N/A		8%	N/A N/A		4%	N/A N/A		71.8	N/A
Edison College	N/A	74%	N/A N/A		16%	N/A N/A		**21%**	N/A N/A		93.1	N/A
Florida Comm. College at Jacksonville	N/A	**79%**	N/A N/A		31%	N/A N/A		**24%**	N/A N/A		97.5	N/A
Gulf Coast Community College	N/A *		N/A N/A		*	N/A N/A		*	N/A N/A		*	N/A
Hillsborough Community College	N/A *		N/A N/A		*	N/A N/A		*	N/A N/A		*	N/A
Indian River Community College	N/A	**78%**	N/A N/A		**33%**	N/A N/A		11%	N/A N/A		92.9	N/A
Lake City Community College	N/A *		N/A N/A		*	N/A N/A		*	N/A N/A		*	N/A
Lake-Sumter Community College	N/A	**86%**	N/A N/A		**43%**	N/A N/A		**21%**	N/A N/A		**101.2**	N/A

D4-1b: Data on student performance of completers of Florida's teacher preparation programs

	Percent of teachers that had 50% or more of their students making learning gains			Percent of teachers that had 75% or more of their students making learning gains			Percent of "High Performing" teachers (based on a Value Table Score of 125, where 100 is average)			Average Value Table Score (100 is average)		
Institution Initia	1 Teacher Preparation Programs (ITP)	Educator Preparation Insititutes (EPI)	District Alternative Certification (DAC)	Initial Teacher Preparation Programs (ITP)	Educator Preparation Insititutes (EPI)	District Alternative Certification (DAC)	Initial Teacher Preparation Programs (ITP)	Educator Preparation Insititutes (EPI)	District Alternative Certification (DAC)	Initial Teacher Preparation Programs (ITP)	Educator Preparation Insititutes (EPI)	District Alternative Certification (DAC)
Manatee Community College	N/A	**81%**	N/A N/A		**38%**	N/A N/A		**31%**	N/A N/A		**101.6**	N/A
Miami-Dade College	56%	**76%**	N/A 28%		**35%**	N/A 12%		**24%**	N/A 76.	4	**103.4**	N/A
North Florida Community College	N/A *		N/A N/A		*	N/A N/A		*	N/A N/A		*	N/A
Okaloosa-Walton College	N/A	64%	N/A N/A		7%	N/A N/A		**21%**	N/A N/A		88.7	N/A
Palm Beach Community College	N/A 69%		N/A N/A		**31%**	N/A N/A		8%	N/A N/A		86.8	N/A
Pasco Hernando Community College	N/A	**79%**	N/A N/A		16%	N/A N/A		16%	N/A N/A		88.5	N/A
Pensacola Junior College	N/A	*	N/A N/A		*	N/A N/A		*	N/A N/A		*	N/A
Polk Community College	N/A	72%	N/A N/A		10%	N/A N/A		18%	N/A N/A		89.5	N/A
Santa Fe Community College	N/A *		N/A N/A		*	N/A N/A		*	N/A N/A		*	N/A
Seminole Community College	N/A *		N/A N/A		*	N/A		*	N/A N/A		*	N/A
St. Johns River Community College	N/A *		N/A N/A		*	N/A N/A		*	N/A N/A		*	N/A
St. Petersburg College	88%	**78%**	N/A	**33% 35%**		N/A 16%		17%	N/A 87.2		83.5	N/A
Tallahassee Community College	N/A *		N/A N/A		*	N/A N/A		*	N/A N/A		*	N/A
Valencia Community College	N/A	**100%**	N/A N/A		**41%**	N/A N/A		*	N/A N/A		98.0	N/A
Independent Colleges and Universities of Florida												
Barry University	**83%**	N/A	N/A 29%		N/A	N/A	**20%**	N/A	N/A 91.	6	N/A	N/A
Bethune Cookman University	*	N/A	N/A *		N/A	N/A *		N/A	N/A *		N/A	N/A
Flagler College	69%	N/A	N/A 21%		N/A	N/A 15%		N/A	N/A 70.	2	N/A	N/A
Florida College	*	N/A	N/A N/A		N/A	N/A *		N/A	N/A *		N/A	N/A
Florida Institute of Technology	*	N/A	N/A *		N/A	N/A *		N/A	N/A *		N/A	N/A
Florida Memorial University	**87%**	N/A	N/A 20%		N/A	N/A 13%		N/A	N/A 97.	2	N/A	N/A
Florida Southern College	**90%**	N/A	N/A	**30%**	N/A	N/A 30%		N/A	N/A	**100.3**	N/A	N/A
Jacksonville University	*	N/A	N/A *		N/A	N/A *		N/A	N/A *		N/A	N/A

D4-1b: Data on student performance of completers of Florida's teacher preparation programs

	Percent of teachers that had 50% or more of their students making learning gains			Percent of teachers that had 75% or more of their students making learning gains			Percent of "High Performing" teachers (based on a Value Table Score of 125, where 100 is average)			Average Value Table Score (100 is average)		
Institution Initia	1 Teacher Preparation Programs (ITP)	Educator Preparation Insititutes (EPI)	District Alternative Certification (DAC)	Initial Teacher Preparation Programs (ITP)	Educator Preparation Insititutes (EPI)	District Alternative Certification (DAC)	Initial Teacher Preparation Programs (ITP)	Educator Preparation Insititutes (EPI)	District Alternative Certification (DAC)	Initial Teacher Preparation Programs (ITP)	Educator Preparation Insititutes (EPI)	District Alternative Certification (DAC)
Lynn University	*	N/A	N/A *		N/A	N/A *		N/A	N/A *		N/A	N/A
Nova Southeastern University	**83%**	N/A	N/A 28%		N/A	N/A 18%		N/A	N/A 91.	9	N/A	N/A
Palm Beach Atlantic University	*	N/A	N/A *		N/A	N/A *		N/A	N/A *		N/A	N/A
Rollins College	*	N/A	N/A *		N/A	N/A *		N/A	N/A *		N/A	N/A
Saint Leo University	**80%**	N/A	N/A	**35%**	N/A	N/A 17%		N/A	N/A 91.	7	N/A	N/A
Southeastern University	**87%**	N/A	N/A 13%		N/A	N/A 0%		N/A	N/A 87.	4	N/A	N/A
Stetson University	**84%**	N/A	N/A 24%		N/A	N/A 19%		N/A	N/A 90.	3	N/A	N/A
University of Miami	**79%**	N/A	N/A 26%		N/A	N/A 16%		N/A	N/A 96.	6	N/A	N/A
University of Tampa	**80%**	N/A	N/A 7%		N/A	N/A 0%		N/A	N/A 86.	9	N/A	N/A
Warner Southern University	*	N/A	N/A *		N/A	N/A *		N/A	N/A *		N/A	N/A
Learning Gains based on FCAT Reading and FCAT Math performance gains in Grades 4 through 10												
*Fewer than 10 teachers with sufficient data to calculate learning gains												
N/A - No teachers matched												
School Districts												
Bay	N/A	N/A 73%		N/A	N/A 20%		N/A	N/A 13%		N/A	N/A 88.	1
Bradford	N/A	N/A *		N/A	N/A *		N/A	N/A *		N/A	N/A *	
Brevard	N/A	N/A *		N/A	N/A *		N/A	N/A *		N/A	N/A *	
Broward	N/A	N/A *		N/A	N/A *		N/A	N/A *		N/A	N/A *	
Citrus	N/A	N/A *		N/A	N/A *		N/A	N/A *		N/A	N/A *	
Clay	N/A	N/A *		N/A	N/A *		N/A	N/A *		N/A	N/A *	
Collier	N/A	N/A *		N/A	N/A *		N/A	N/A *		N/A	N/A *	
Dade	N/A	N/A	**84%**	N/A	N/A	**31%**	N/A	N/A 13%		N/A	N/A 97.	2
DeSoto	N/A	N/A *		N/A	N/A *		N/A	N/A *		N/A	N/A *	
Dixie	N/A	N/A *		N/A	N/A *		N/A	N/A *		N/A	N/A *	
Duval	N/A	N/A 71%		N/A	N/A 22%		N/A	N/A 16%		N/A	N/A 95.	2
Escambia	N/A	N/A 75%		N/A	N/A 11%		N/A	N/A 17%		N/A	N/A 80.	7
Hardee	N/A	N/A *		N/A	N/A *		N/A	N/A *		N/A	N/A *	
Hendry	N/A	N/A *		N/A	N/A *		N/A	N/A *		N/A	N/A *	
Hernando	N/A	N/A *		N/A	N/A *		N/A	N/A *		N/A	N/A *	
Highlands	N/A	N/A *		N/A	N/A *		N/A	N/A *		N/A	N/A *	

D4-1b: Data on student performance of completers of Florida's teacher preparation programs

	Percent of teachers that had 50% or more of their students making learning gains			Percent of teachers that had 75% or more of their students making learning gains			Percent of "High Performing" teachers (based on a Value Table Score of 125, where 100 is average)			Average Value Table Score (100 is average)		
Institution Initia	1 Teacher Preparation Programs (ITP)	Educator Preparation Insititutes (EPI)	District Alternative Certification (DAC)	Initial Teacher Preparation Programs (ITP)	Educator Preparation Insititutes (EPI)	District Alternative Certification (DAC)	Initial Teacher Preparation Programs (ITP)	Educator Preparation Insititutes (EPI)	District Alternative Certification (DAC)	Initial Teacher Preparation Programs (ITP)	Educator Preparation Insititutes (EPI)	District Alternative Certification (DAC)
Hillsborough	N/A	N/A	**81%**	N/A	N/A 24%		N/A	N/A 19%		N/A	N/A 93.	4
Indian River	N/A	N/A *		N/A	N/A *		N/A	N/A *		N/A	N/A *	
Lake	N/A	N/A *		N/A	N/A *		N/A	N/A *		N/A	N/A *	
Lee	N/A	N/A 63%		N/A	N/A 6%		N/A	N/A 13%		N/A	N/A 90.	8
Liberty	N/A	N/A *		N/A	N/A *		N/A	N/A *		N/A	N/A *	
Manatee	N/A	N/A 71%		N/A	N/A 21%		N/A	N/A	**21%**	N/A	N/A	**103.1**
Marion	N/A	N/A *		N/A	N/A *		N/A	N/A *		N/A	N/A *	
Monroe	N/A	N/A	**100%**	N/A	N/A *		N/A	N/A *		N/A	N/A *	
Okaloosa	N/A	N/A *		N/A	N/A *		N/A	N/A *		N/A	N/A *	
Okeechobee	N/A	N/A *		N/A	N/A *		N/A	N/A *		N/A	N/A *	
Orange	N/A	N/A	**81%**	N/A	N/A 18%		N/A	N/A 12%		N/A	N/A 92.	3
Osceola	N/A	N/A *		N/A	N/A *		N/A	N/A *		N/A	N/A *	
Palm Beach	N/A	N/A	**89%**	N/A	N/A 28%		N/A	N/A 11%		N/A	N/A 90.	1
Pasco	N/A	N/A	**83%**	N/A	N/A 27%		N/A	N/A	**21%**	N/A	N/A 91.	0
Pinellas	N/A	N/A 51%		N/A	N/A 22%		N/A	N/A 14%		N/A	N/A 76.	9
Polk	N/A	N/A 66%		N/A	N/A 3%		N/A	N/A 5%		N/A	N/A 69.	3
Putnam	N/A	N/A *		N/A	N/A *		N/A	N/A *		N/A	N/A *	
Santa Rosa	N/A	N/A *		N/A	N/A *		N/A	N/A *		N/A	N/A *	
Sarasota	N/A	N/A *		N/A	N/A *		N/A	N/A *		N/A	N/A *	
Seminole	N/A	N/A	**91%**	N/A	N/A 18%		N/A	N/A 18%		N/A	N/A	**108.0**
St. Johns	N/A	N/A *		N/A	N/A *		N/A	N/A *		N/A	N/A *	
St. Lucie	N/A	N/A *		N/A	N/A *		N/A	N/A *		N/A	N/A *	
Seminole	N/A	N/A *		N/A	N/A *		N/A	N/A *		N/A	N/A *	
Sumter	N/A	N/A *		N/A	N/A *		N/A	N/A *		N/A	N/A *	
Volusia	N/A	N/A *		N/A	N/A *		N/A	N/A *		N/A	N/A *	
Wakulla	N/A	N/A *		N/A	N/A *		N/A	N/A *		N/A	N/A *	
FSU Lab School	N/A	N/A *		N/A	N/A *		N/A	N/A *		N/A	N/A *	
Learning Gains based on FCAT Reading and FCAT Math performance gains in Grades 4 through 10												
*Fewer than 10 teachers with sufficient data to calculate learning gains												
N/A - No teachers matched												

D5-1: Section (D) Initiative Summary Chart

Federal Requirement	Initiative Outcome	Implementation Timeline	Total Budget
(D)(2)(i) Measure student growth	Improve ability and breadth in measurement of student academic growth at the district and state levels	Year 1: FDOE with advisory body input selects new statewide measure for student growth in FCAT-associated courses that is attributable at the teacher level; FDOE provides districts with baseline data for these students and teachers and communication materials explaining the calculation; FDOE issues grants to professional associations to develop measures for performance-based courses Year 2: FDOE provides LEAs with growth models for use with standardized assessments and existing district-developed assessments; FDOE provides LEAs with FCAT performance data using new growth measure; professional development is provided on use of growth measure results for classroom instruction Year 3: LEAs create/select some assessments from items used in state interim assessments; districts pilot performance measures in performance-based courses; adjustments made (if any) to growth measure based on evaluation and statewide communication around changes is provided Year 4: Additional LEA-developed/selected assessments for core and high-incidence courses are shared among participants; FDOE adopts recommendations for performance measures in performance-based courses	**$ 5,800,000**
(D)(2)(ii) Design evaluation systems	Implement rigorous, transparent, and fair evaluation systems for teachers and principals that measure student growth	Year 1: LEAs revise teacher and principal evaluations based on core practices and baseline teacher effectiveness data; FDOE provides national expertise in teacher evaluation to provide face-to-face support to participating districts in re-developing their evaluation systems. Year 2: LEAs implement new teacher and principal evaluations to incorporate statewide student growth measure; LEA systems incorporate student performance data as 50% of the evaluation (with at least 35% using a value-added calculation based on state assessments); districts pilot additional teacher-level student growth measures Year 3: LEAs implement new evaluations to incorporate statewide and Year 2 piloted student growth measures; LEAs pilot additional teacher-level student growth measures Year 4: LEA evaluation systems incorporate student performance data as 50% of the evaluation (with at least 40% using a value-added calculation based on state assessments); LEAs implement new evaluations for all teachers that incorporate statewide and comparable local student growth measures to cover at least 80% of teachers and 100% of principals	**$ 4,795,992**
(D)(2)(iii) Conduct annual evaluations	Revise district evaluation systems to give additional support and information to 1st- and 2nd- year teachers and teachers in the year before a milestone career event	Year 1: LEAs revise teacher evaluations based on core practices and baseline teacher effectiveness data; LEAs develop a beginning teacher support program Year 2: LEAs implement new teacher evaluations to incorporate statewide student growth measure; LEAs use new evaluation system to conduct multiple observations of 1st- and 2nd-year teachers Year 3: LEAs pilot additional metrics for evaluations of milestone teachers; LEAs incorporate data from formative and interim assessments into beginning teacher evaluations Year 4: LEAs conduct evaluations for 1st and 2nd year teachers that are integrated with the LEA's beginning teacher program; LEAs conduct completed multi-metric evaluations of milestone teachers and use the results in making the milestone career decisions	included in (D)(2)(ii)

D5-1: Section (D) Initiative Summary Chart

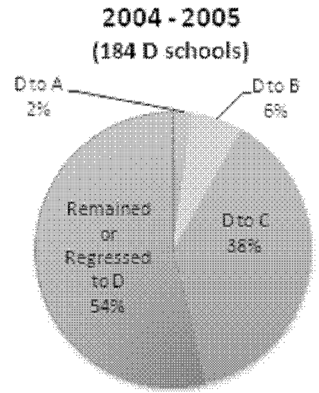
(D)(2)(iv) Use evaluations to inform compensation, promotion, retention tenure, removal	Incorporating evaluation results into making career decisions	Year 1: N/A: District evaluations are in re-development, so other decisions based on evaluations are not yet being made. Year 2: By the end of the 2011-12 school year, 75% of participating LEAs will use evaluation results to inform retention decisions (retention = annual contract) and professional development.; state provides consultant to identify existing fiscal resources to make the transition to performance-based compensation. Year 3: By the end of the 2012-13 school year, all districts will use evaluation results for retention and professional development purposes; 50% of districts will use evaluation results to inform promotion decisions, and any bonus compensation plans that are in place; financial consultants provide assistance. Year 4: By the beginning of the 2013-14 school year, 75% of participating LEAs will have board policies in place to use evaluation results to inform professional development, salary compensation, promotion, retention, professional contract, and removal decisions; 100% of participating LEAs will have board policies in place to use evaluation results to make decisions in most of these areas.	**$ 12,705,000**
(D)(3)(i) Ensure equitable distribution of effective teachers and principals in high poverty/minority schools	Improving districts' ability and accountability for assigning effective teachers and principals to high need schools	Year 1: All participating LEAs examine current policies, practices and baseline student growth data and begin negotiations to change policies (some will complete); residency teacher preparation program grants issued; principal preparation program grants issued; institute recruitment efforts for effective minority teachers; data analysis for FL Virtual School placements Year 2: All participating LEAs implement new evaluation systems and complete negotiations of new policies; FDOE begins reporting data by school on evaluation results and student growth; specialized teacher and principal preparation programs implemented; continue minority teacher recruitment program; develop enhancement to recruitment center for addition of effectiveness measure Year 3: All participating LEAs will implement board policies to use evaluation results for determining assignment of teachers; first completers of residency and principal preparation programs; continue minority teacher recruitment program; implement enhancement to recruitment center for addition of effectiveness measures Year 4: Schools in participating LEAs reflect the appropriate balance of effective and highly effective staff in high poverty/minority schools continue minority teacher recruitment program; GTL evaluator conducts final review of effects of LEA hiring and placement practices	**$ 25,642,000**
(D)(3)(ii) Ensure equitable distribution of effective teachers and principals in hard to staff subjects/ specialties	Improving districts' access to teachers in hard to staff subjects and their accountability for assigning those teachers equitably to high poverty/minority schools and	Year 1: All participating LEAs examine current policies, practices and baseline student growth data and begin negotiations to change policies (some will complete) for assignment of teachers and programs to support high performers in hard to staff placements; STEM teacher preparation program grants issued. Year 2: All participating LEAs implement new evaluation systems and begin to implement new strategies; partner institutions admit first STEM program teacher candidates. Year 3: LEAs revise strategies and institute science assessments as part of evaluations. Year 4: Schools in participating LEAs reflect the appropriate balance of effective and highly effective staff in reading, mathematics and ESOL and begin implementing strategies for science; first completers of STEM teacher education programs employed in LEAs	$ 10,200,000

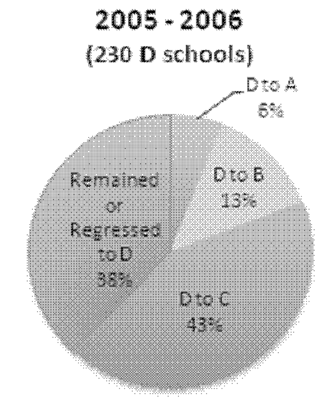
D5-1: Section (D) Initiative Summary Chart

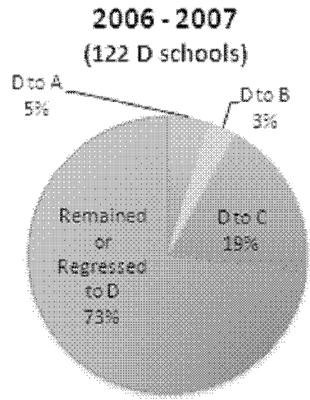
(D)(4) Evaluate teacher and principal preparation programs	Using performance measures to improve contributions of teacher and principal preparation programs	Year 1: Job-embedded program grants issued; principal program grants issued; program evaluation process developed based on new state student growth model; baseline data provided to existing programs Year 2: Partner institutions admit first new program teacher candidates; first reporting through eIPEP system using new performance measure categories for continued program approval; improvements to system made based on initial study and review Year 3: LEAs hire first job-embedded teacher prep program candidates; first principal program cohort completed; reporting continues through eIPEP; preliminary ratings of teacher preparation programs published; Year 4: First completers of STEM teacher education programs and principals employed in districts; first candidates in job-embedded programs completed; data from partner programs used to revise initial program approval requirements and establish performance measures for continued program School Leadership approval requirements; student growth results from common LEA assessments introduced into teacher preparation performance measures	**$ 1,620,000**
(D)(5)(i) Provide effective support to teachers and principals and (ii) evaluate effectiveness of professional development	Improve districts' ability to provide effective professional development to teachers and principals	Year 1: Provide LEAs with training on methods of evaluating professional development and lesson study; develop school board training and Commisisoner's Leadership Academy; LEAs develop components of beginning teacher support programs; data elements for professional development evaluation are instituted in the state's annual reporting system Year 2: Assist LEAs with implementing evaluation of professional development provided on Common Core Standards and lesson study; develop state standards for instructional coaches; post digital resources for follow-up and continued training on common core and lesson study; LEAs incorporate teacher evaluation results into professional development systems; begin delivery of school board training; LEAs begin implementing beginning teacher support programs; initial reporting on professional development evaluation begins through the state's online portal Year 3: Provide LEAs with training and trainer materials on instructional coaching standards; continue follow-up support on evaluation of professional development; implement statewide reporting of professional development evaluation results; LEAs incorporate evaluation data into beginning teacher support programs; continue to refine and improve data reporting on professional development; LEAs begin to make decisions about keeping, changing, removing professional development offerings based on new data reporting Year 4: Adopt instructional coaching standards statewide; disseminate successful practices in professional development evaluation through state's online portal	**$ 5,404,380**
Community of practice (supports entire assurance)	Support for participating districts to share successful practices and products, as well as implementation challenges and solutions.	The FDOE will facilitate annual Community of Practice meetings for participating districts to share successful practices and products, as well as implementation challenges and solutions. FDOE will support face-to-face and electronic meetings of the working groups for (D)(2)(i) and (D)(4). FDOE will support web development to post restuls from Community of Practice and working group products to the portal. Each of these activities occurs annually, with additional web development time in year 4.	**$ 744,880**
GTL evaluation (supports entire assurance)	GTL evaluation will provide outcomes and effects of initiatives on student achievement and on the teacher and principal workforce	Year 1: Set up evaluation questions, framework; work with districts to ensure data collections in place. Year 2: Implement evaluation; annual report of results. Year 3: Implement evaluation; annual report of results. Year 4: Implement evaluation; final report will occur within 6 months of end of grant.	**$ 2,000,000**
Totals			**$ 68,912,252**

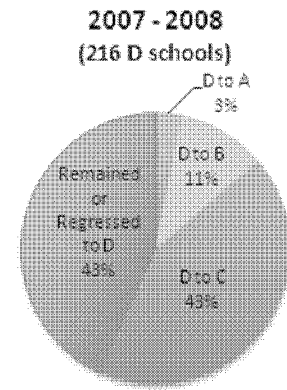
E1-1: Data on Historic School Improvement Prior to DA Pilot

Year	D to A	%	D to B	%	D to C	%	Total # of D Schools	% of D schools that moved up at least one letter grade
04-05	4	2.2%	11	6%	70	38%	184	**46%**
05-06	14	6%	30	13%	99	43%	230	**62%**
06-07	6	4.2%	4	3.2%	23	18.8%	122	**27%**
07-08	7	3.2%	23	10.6%	93	43%	216	**57%**

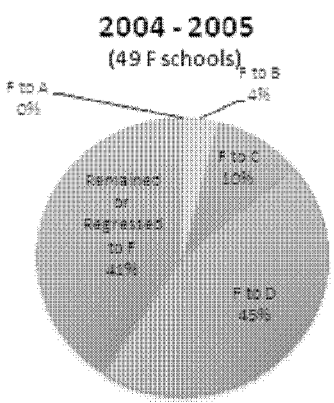


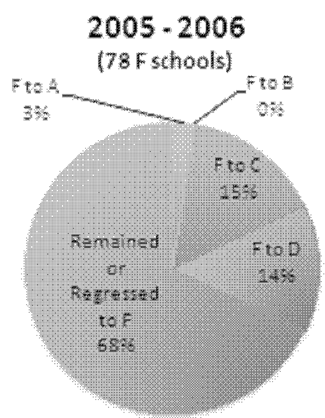


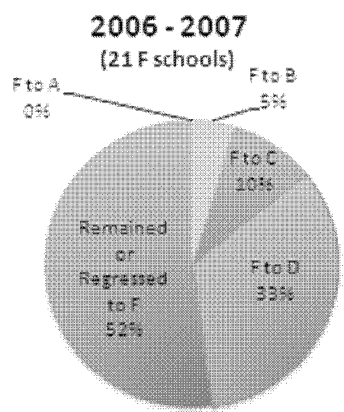


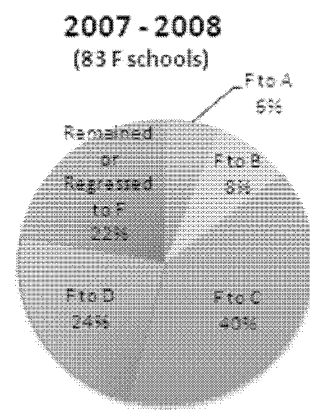


Year	F to A	%	F to B	%	F to C	%	F to D	%	Total # of F Schools	% of F schools that moved up at least one letter grade
04-05	0	0%	2	4%	5	10%	22	45%	49	**59%**
05-06	2	2.5%	0	0%	12	15.3%	11	14.1%	78	**32%**
06-07	0	0%	1	4.7%	2	9.5%	7	33.3%	21	**48%**
07-08	5	6%	7	8.4%	33	39.7%	20	24%	83	**78%**









Year	Total # of D & F Schools	% combined that moved up at least one letter grade
04-05	233	49%
05-06	308	54%
06-07	143	30%
07-08	299	63%

E1-2: Section 1008.33, F.S., *Authority to Enforce Public School Improvement*

1008.33 Authority to enforce public school improvement.--
(1) The State Board of Education shall comply with the federal Elementary and Secondary Education Act (ESEA), 20 U.S.C. ss. 6301 et seq., and its implementing regulations. The State Board of Education is authorized to adopt rules in compliance with the ESEA and, after evaluating and determining that the ESEA and its implementing regulations are consistent with the statements of purpose set forth in the ESEA (2002), may adopt rules to maintain compliance with the ESEA.

(2)(a) Pursuant to subsection (1) and ss. 1008.34, 1008.345, and 1008.385, the State Board of Education shall hold all school districts and public schools accountable for student performance. The state board is responsible for a state system of school improvement and education accountability that assesses student performance by school, identifies schools in which students are not making adequate progress toward state standards, and institutes appropriate measures for enforcing improvement.

(b) The state system of school improvement and education accountability must provide for uniform accountability standards, provide assistance of escalating intensity to low-performing schools, direct support to schools in order to improve and sustain performance, focus on the performance of student subgroups, and enhance student performance.

(c) School districts must be held accountable for improving the academic achievement of all students and for identifying and turning around low-performing schools.

(3)(a) The academic performance of all students has a significant effect on the state school system. Pursuant to Art. IX of the State Constitution, which prescribes the duty of the State Board of Education to supervise Florida's public school system, the State Board of Education shall equitably enforce the accountability requirements of the state school system and may impose state requirements on school districts in order to improve the academic performance of all districts, schools, and students based upon the provisions of the Florida K-20 Education Code, chapters 1000-1013, and the federal Elementary and Secondary Education Act, 20 U.S.C. ss. 6301 et seq., and its implementing regulations.

(b) For the purpose of determining whether a public school requires action to achieve a sufficient level of school improvement, the Department of Education shall annually categorize a public school in one of six categories based on the school's grade, pursuant to s. 1008.34, and the level and rate of change in student performance in the areas of reading and mathematics, disaggregated into student subgroups as described in the federal Elementary and Secondary Education Act, 20 U.S.C. s. 6311(b)(2)(C)(v)(II).

(c) Appropriate intervention and support strategies shall be applied to schools that require action to achieve a sufficient level of improvement as described in paragraph (b). The intervention and support strategies must address student performance, including, but not limited to, improvement planning, leadership quality improvement, educator quality improvement, professional development, curriculum alignment and pacing, and the use of continuous improvement and monitoring plans and processes. The State Board of

Education may prescribe reporting requirements to review and monitor the progress of the schools.

(4) The Department of Education shall create a matrix that reflects intervention and support strategies to address the particular needs of schools in each category.

(a) Intervention and support strategies shall be applied to schools based upon the school categorization. The Department of Education shall apply the most intense intervention strategies to the lowest-performing schools. For all but the lowest category and "F" schools in the second lowest category, the intervention and support strategies shall be administered solely by the districts and the schools.

(b) The lowest-performing schools are schools that have received:
1. A grade of "F" in the most recent school year and in 4 of the last 6 years; or
2. A grade of "D" or "F" in the most recent school year and meet at least three of the following criteria:
a. The percentage of students who are not proficient in reading has increased when compared to measurements taken 5 years previously;
b. The percentage of students who are not proficient in mathematics has increased when compared to measurements taken 5 years previously;
c. At least 65 percent of the school's students are not proficient in reading; or
d. At least 65 percent of the school's students are not proficient in mathematics.

(5)(a) In the school year after a school is initially identified as a school in the lowest-performing category, the school district must submit a plan, which is subject to approval by the State Board of Education, for implementing one of the following options at the beginning of the next school year. The plan must be implemented unless the school moves from the lowest-performing category:
1. Convert the school to a district-managed turnaround school by means that include implementing a turnaround plan approved by the Commissioner of Education which shall become the school's improvement plan;
2. Reassign students to another school and monitor the progress of each reassigned student;
3. Close the school and reopen the school as one or more charter schools, each with a governing board that has a demonstrated record of effectiveness; or
4. Contract with an outside entity that has a demonstrated record of effectiveness to operate the school.

(b) If a school does not move from the lowest-performing category during the initial year of implementing one of the options in paragraph (a), the school district must submit a plan, which is subject to approval by the State Board of Education, for implementing a different option in paragraph (a) at the beginning of the next school year, unless the State Board of Education determines that the school is likely to move from the lowest-performing category if additional time is provided to implement intervention and support strategies. The State Board of Education shall determine whether a school district may continue to implement an option beyond 1 year while a school remains in the lowest-performing category.

(6) In order to advance to a higher category, a school must make significant progress by improving its school grade and by increasing student performance in mathematics and reading. Student performance must be evaluated for each student subgroup as set forth in paragraph (3)(b).

(7) Beginning July 1, 2009, the Department of Education shall commence its duties under this section.

(8) By July 1, 2010, the State Board of Education shall adopt rules pursuant to ss. 120.536(1) and 120.54 to administer this section. The state board shall consult with education stakeholders in developing the rules.

NOTICE OF CHANGE

REMINDER: THIS IS FROM THE FIRST NOTICE OF CHANGE. The second one, only had a couple of paragraphs in it.

Notice is hereby given that the following changes have been made to the proposed rule in accordance with subparagraph 120.54(3)(d)1., F.S., published

DEPARTMENT OF EDUCATION
State Board of Education
RULE NO: RULE TITLE
6A-1.099811: Differentiated Accountability State System of School Improvement

NOTICE OF CHANGE

Notice is hereby given that the following changes have been made to the proposed rule in accordance with subparagraph 120.54(3)(d)1., F.S., published in Vol. 35 No. 50, December 18, 2009 issue of the Florida Administrative Weekly.

This is a new rule.

6A-1.099811 Differentiated Accountability State System of School Improvement.

The purpose of this rule is to set forth the Differentiated Accountability State System of School Improvement, to set forth the framework for categorizing how well schools are meeting Adequate Yearly Progress criteria, to define the level of assistance provided to schools, and to identify the support systems and strategies to be implemented by schools and districts.

(1) Definitions. The following definitions shall be used in this rule:

(a) "Adequate Yearly Progress" or "AYP" means that the AYP criteria for demonstrating progress toward state proficiency goals were met by each subgroup.

(b) "Annual goals" or "state proficiency goals" means the annual targets for the percent of students who meet grade level proficiency in reading and mathematics as established in "Adequate Yearly Progress Benchmarks in Florida" of the 2009 Guide to Calculating Adequate Yearly Progress (AYP), Technical Assistance Paper dated June 2009, which is hereby adopted by reference and made part of this rule and accessible at http://schoolgrades.fldoe.org/pdf/0809/2009AYPTAP.pdf. Proficiency on the FCAT is attained at scoring level 3 or higher in reading and mathematics on a 5-level range. Proficiency on the Florida Alternate Assessment is attained at scoring level 4 or higher on a 9-level range.

(c) "AYP Count" means the value assigned to a school that did not achieve AYP for two (2) consecutive years, starting from the 2002-03 school year. The school is assigned a value of one (1) AYP count if the school failed to make AYP for two (2) consecutive years and increases by one (1) for each year that the school fails to achieve AYP.

(d) "Benchmark Baseline Assessment" means a diagnostic assessment given at the beginning of the year to evaluate students' strengths and weaknesses on grade-level skills in reading, mathematics, science, and writing.

(e) "Benchmark Mid-Year Assessment" means a diagnostic assessment given at the mid-point of a school year to evaluate students' progress on grade-level skills in reading, mathematics, science, and writing.

(f) "Benchmark Mini-Assessments" means diagnostic assessments given at frequent intervals used to monitor student learning of recently taught skills, and to guide teachers' instructional focus.

(g) “Common planning time” means the time provided to teachers to meet regularly with common grade-level or subject-area teachers to collaborate.

(h) “Community Assessment Team” or “CAT” means a team consisting of stakeholders including but not limited to parents, business representatives, teachers, administrators, district level personnel, and Department of Education staff, who advocate for low-performing schools within their community, as set forth in Section 1008.345, Florida Statutes.

(i) “D Former F” means a “D” graded school that improved from a grade of “F” the previous academic year.

(j) “Data chats” means the process of teachers or administrators meeting with students to discuss the results of student’s assessments.

(k) “Department” means the Florida Department of Education (FDOE).

(l) “Differentiated Accountability State System of School Improvement,” “Differentiated Accountability” and “DA” mean the accountability system used by Florida to meet conditions for participation in the Elementary and Secondary Education Act, 20 U.S.C.ss 6301 et seq. that requires states to hold public schools and school districts accountable for making adequate yearly progress toward meeting state proficiency goals.

(m) “Direct instructional support” means support provided by a district curriculum specialist who visits the school frequently to provide onsite professional development and support to classroom teachers.

(n) “District” means the school district responsible for collaborating with the Department and schools to ensure the state system of school improvement is implemented~~.~~

(o) “District Improvement and Assistance Plan” means a district level plan, submitted to the Department, that includes strategies for improving school performance and increasing student achievement.

(p) “Florida Continuous Improvement Model” or “FCIM” means a method for effectuating improvement that is based on the principle that student and teacher success requires a continuous effort. Key elements include analyzing data, developing timelines, quality instruction, and frequently assessing students.

(q) “Fully released coach” means a full time reading and mathematics or science coach who is devoted full time to coaching duties.

(r) “Individual Professional Development Plan” or “IPDP” means the plan for each instructional employee assigned to a school as set forth in Section 1012.98, Florida Statutes.

(s) “Instructional monitoring process” means a process for monitoring instructional programs and practices, and ensuring that they are implemented.

(t) “Lesson Study Group” or “LSG” means a small group of teachers who collaborate to plan an actual classroom lesson (called a “research lesson”), observe how the lesson works in practice, and report on the results for the benefit of other teachers.

(u) “Next Generation Sunshine State Standards” or “NGSSS” means the state’s public K-12 curriculum standards adopted pursuant to Section 1003.41, Florida Statutes.

(v) “Peer Review” means the process by which school staff reviews and provides feedback on another school’s improvement plan.

(w) “Response to Intervention” or “RtI” means the practice of providing services and interventions matched to individual student needs as determined by an analysis of student data and feedback from observations.

(x) “School Advisory Council” means the council set forth in Section 1001.452, Florida Statutes.

(y) "School grade" means the grade assigned to a school pursuant to Section 1008.34, Florida Statutes, and Rule 6A-1.09881, F.A.C., except that a high school's grade will be established solely by the FCAT scores and AYP for purposes of Differentiated Accountability.

(z) "School improvement plan" or "SIP" means a school level plan, submitted to the district and the Department, that includes strategies for improving school performance and increasing student achievement.

(aa) "State adopted material" means textbooks and instructional materials that are aligned to the Next Generation Sunshine State Standards and approved for use in the state's schools under Section 1006.34, Florida Statutes.

(bb) "Subgroup" means a demographic group whose performance on the state assessment is measured to determine AYP and includes American Indian, Asian, black or African American, Hispanic, white, economically disadvantaged students, English language learners, students with disabilities, and all students.

(2) Adequate Yearly Progress.

(a) Every public school is expected to make adequate yearly progress towards state proficiency goals for each subgroup.

(b) AYP shall be calculated in accordance with Part II, 1.-5. of the 2009 Guide to Calculating Adequate Yearly Progress (AYP) Technical Assistance Paper, June 2009, which is hereby adopted by reference in this rule and accessible at http://schoolgrades.fldoe.org/pdf/0809/2009AYPTAP.pdf.

(c) AYP is comprised of thirty-nine (39) criteria as follows:

1. The first nine (9) criteria are met by determining whether the participation rate for each subgroup being evaluated in reading is at least ninety-five (95) percent.

2. The second nine (9) criteria are met by determining whether the participation rate for each subgroup being evaluated in mathematics is at least ninety-five (95) percent.

3. The third nine (9) criteria are met by determining whether the annual goals for reading proficiency are met by each subgroup being evaluated.

4. The fourth nine (9) criteria are met by determining whether the annual goals for mathematics proficiency are met by each subgroup being evaluated;

5. The thirty-seventh criterion is met if school-wide performance in writing improved by <u>at least</u> one (1) percent or is at a rate of ninety (90) percent or higher;

6. The thirty-eighth criterion is met if the school does not earn a grade of D or F; and

7. The thirty-ninth criterion is met if a high school improved its graduation rate or has a graduation rate of eighty-five (85) percent or higher.

(d) If a criterion is not applicable to a school because the subgroup is not of sufficient number to meet the state's minimum subgroup-size requirement for Adequate Yearly Progress reporting or if the school is not a high school, that criterion will be considered as having been met.

(e) The percentage of AYP criteria met is calculated by determining what percent of the thirty-nine (39) criteria was met by the school.

(3) Categories. The Department shall place each school into one of six categories annually. Beginning with the highest performing, the categories are entitled: Schools Not Required to Participate in Differentiated Accountability Strategies, Prevent I, Correct I, Prevent II, Correct II, and Intervene.

(a) Schools Not Required to Participate in Differentiated Accountability Strategies are schools in the highest-performing school category. A school shall be so categorized when the school:

1. Is graded "A", "B", "C", or is ungraded; and

2. Has not failed to make AYP for two (2) consecutive years.

(b) A school shall be categorized as a Prevent I school when the school:

1. Is graded “A”, “B”, “C”, or is ungraded; and

2. Has an AYP count between one(1) and three (3); and

3. Has met at least eighty (80) percent of AYP criteria for at least two (2) consecutive years.

(c) A school shall be categorized as a Correct I school when the school:

1. Is graded “A”, “B”, “C”, or is ungraded and;

2. Has an AYP Count of four (4) or greater; and

3. Has met at least eighty (80) percent of AYP criteria.

(d) A school shall be categorized as a Prevent II school when the school:

1. Is a “D” school that failed to meet AYP criteria for fewer than two (2) consecutive years; or

2. Is a “D” school that failed to meet AYP criteria for at least two (2) consecutive years, with an AYP count between one (1) and three (3); or

3. Is graded “A”, “B”, “C”, or is ungraded; and

a. Has an AYP Count between one (1) and three (3); and

b. Has met less than eighty (80) percent of AYP criteria and has not met AYP criteria for at least two (2) consecutive years.

(e) A school shall be categorized as a Correct II school when the school:

1. Is graded “F” regardless of AYP status; or

2. Is graded “D” and has an AYP Count of four (4) or greater; or

3. Is graded “A”, “B”, “C”, or is ungraded; and

a. Has an AYP Count of four (4) or greater; and

b. Has met less than eighty (80) percent of AYP criteria.

(f) A school shall be categorized as an Intervene school when the school:

1. Is graded “F” and has earned at least four (4) “F” grades in the last six (6) school years; or

2. Is graded “D” and meets the criteria for a Correct II school or is graded “F” and meets the criteria for a Correct II school, and the school also meets at least three (3) of the four (4) following conditions:

a. The percentage of non-proficient students in reading has increased when compared to the percentage attained five (5) years earlier.

b. The percentage of non-proficient students in mathematics has increased when compared to the percentage attained five (5) years earlier.

c. Sixty-five (65) percent or more of the school’s students are not proficient in reading.

d. Sixty-five (65) percent or more of the school’s students are not proficient in mathematics.

3. Alternative schools are exempt from qualifying for the Intervene category.

(4) Notice to District of School Category. The Department shall notify each school district of the category of each school located within the district.

(5) Intervention and Support Strategies. The strategies and support interventions required of schools in need of improvement fall into seven (7) areas: school improvement planning, leadership quality improvement, educator quality improvement, professional development, curriculum alignment and pacing, the Florida Continuous Improvement Model, and monitoring plans and processes. The action required for each school category is set forth in the form entitled, DA2 – Strategies and Support for Differentiated Accountability, effective as of the effective date of this rule. For charter schools and alternative schools the action required for each school category is set forth in the forms entitled DA-3, 2009-2010 Strategies and Support for Differentiated Accountability – Alternative Schools and DA-4, 2009-2010 Strategies and

Support for Differentiated Accountability – Charter Schools as applied to charter schools and alternative schools. Forms DA2, DA-3 and DA-4 are hereby incorporated by reference in this rule and can be obtained through the Department of Education website www.flbsi.org/DA/index.htm or by contacting the Bureau of School Improvement in the Department. The entity responsible for implementing the Differentiated Accountability strategies is as follows:

(a) For Prevent I schools:

1. The school implements interventions.

2. The district monitors progress and provides support to schools.

(b) For Correct I schools:

1. The school implements interventions.

2. The district directs interventions.

3. The district monitors progress and provides support to schools.

(c) For Prevent II schools:

1. The school implements interventions.

2. The district directs school interventions.

3. The district monitors progress and provides support to schools.

4. The Department monitors the district's support to schools.

(d) For Correct II schools:

1. The school implements interventions.

2. The district directs school interventions.

3. The district and Department monitor progress and support schools.

4. Intensive onsite support is provided by the district and the Department for schools graded "F," "D Former F," and Exiting Intervene schools.

(e) For Intervene schools:

1. The school implements interventions.

2. The district and Department conduct onsite monitoring of intervention implementations.

3. The district and Department provide intensive onsite support.

4. In the event the school does not make sufficient progress to exit the Intervene category within one (1) year, the district must choose one (1) of the four (4) reconstitution options described in subsection (8) of this rule.

(6) School Improvement Plan.

(a) Except for a school in the highest performing category, a school's improvement plan shall include the strategies and support activities found in the Department's Form DA2 – Strategies and Support for Differentiated Accountability. The School Improvement Plan template as incorporated by reference in Rule 6A-1.09981, F.A.C., as Form SIP-1, is available at http://www.flbsi.org.

(b) Non-Title I A, B, or C schools may receive a waiver from FDOE if the district/school can demonstrate that their existing template provides strategies for subgroups that did not meet AYP in the area of data analysis, RtI, and increasing student achievement. Applications for waivers are submitted to the Department of Education, K-12 Public Schools, prior to the annual submission deadline of the School Improvement Plan. The Department shall approve or deny the waiver and notify the district.

(7) Progression and exiting from categories other than Intervene. A Prevent I, Correct I, Prevent II, or Correct II school may progress to a School Not Required to Participate in Differentiated Accountability Strategies when it meets AYP criteria for two (2) consecutive years.

(8) Intervene Status; exiting the Intervene category; consequences of failing to exit.

(a) In order to exit the Intervene category a school must make significant progress after one (1) year. Significant progress is defined as:

1. The school's letter grade improves to a "C" or better, and

2. The school's AYP performance improves so that at least one (1) subgroup in reading and at least one (1) subgroup in mathematics that previously did not make AYP has made AYP.

(b) In the event a school in the Intervene category fails to make significant progress within one (1) year and exit the Intervene category, the district and Department will provide assistance with the selection and implementation of one (1) of the four (4) following reconstitution options for the school:

1. Reassign students to another school and monitor the students' progress. This option requires the district to:

a. Close the school and assign the students to different locations.

b. Follow established procedures for attendance boundary changes and zoning requirements in reassigning students to different locations.

c. Ensure that teachers from the closed school who are responsible for teaching reading and mathematics are not assigned to any school where the students from the closed school are assigned unless the teacher is highly qualified as set forth in Section 1012.05, Florida Statutes, and sixty-five (65) percent or more of the teacher's students achieved learning gains on FCAT for reading and mathematics for elementary teachers or the appropriate content area for middle and high school teachers.

d. Identify students from the closing school who were reassigned and monitor their academic progress. Progress will be reported annually to the Department for three (3) years.

e. In addition to open house events, the school must offer a flexible number of meetings to inform parents of their child's performance at school. These meetings shall be held at convenient times for the teacher and the parent~~.~~

2. Convert the school to a district-managed turnaround school. This option requires:

a. The district to assign a district employee who is responsible for managing the turnaround process.

b. The district to replace the principal, all assistant principals, and instructional coaches unless assigned to the school for less than one (1) year The Department shall provide recommendations to the district with respect to replacing the principal, assistant principals, and instructional coaches.

c. The district to employ a fair, consistent, transparent, and reliable system to reassign or replace the majority of the instructional faculty and staff whose students' failure to improve can be attributed to a lack in performance on the part of faculty and staff providing instruction. Reading and mathematics teachers may not be rehired at the school unless they are highly qualified and effective instructors as set forth in Section 1012.05, Florida Statutes, and as evidenced by sixty-five (65) percent or more of their students achieving learning gains on FCAT for reading and mathematics for elementary teachers or the appropriate content area for middle and high school teachers.

d. The district to undertake a comprehensive search to recruit a new principal with a record of turning around a similar school. The principal's contract must include differentiated pay in the form of a signing bonus and performance pay for raising student achievement. In order to implement differentiated principal pay, the district shall employ a fair, consistent, transparent, and reliable system to determine issues surrounding raising student achievement. The selection of the principal shall be informed by guidance from the Department.

e. The principal and new leadership team to select new faculty and staff with the Department's assistance. Differentiated pay may be offered to faculty through signing bonuses and compensation for mandatory professional development and involvement in additional parent and student functions after school. Performance pay may also be offered to teachers for raising student achievement. In order to implement differentiated faculty pay, the district shall employ a fair, consistent, transparent, and reliable system to determine issues surrounding raising student achievement. The hiring process shall be completed in time to ensure all teachers participate in summer professional development activities.

f. The district to provide the school with a fully released reading coach and a fully released mathematics or science coach, and will provide additional coaches based on enrollment, unless the district provides direct instructional support services.

g. The district to assemble an advisory board comprised of district personnel, community members, and a representative of the Department. The advisory board shall report monthly to the superintendent regarding its activities, concerns, and recommendations. Only one advisory board is required for a district with more than one school in the Intervene category.

h. The district to make available to the school's administrators and teachers prior to the opening of school a summer professional development academy that is developed in conjunction with the Department.

i. The school to establish common planning time within the master schedule to allow meetings to occur

j. The district to enhance its school allocation formula to provide additional funds, resources, and personnel to the school.

k. In addition to open house events, the school must offer a flexible number of meetings to inform parents of their child’s performance at school. These meetings shall be held at convenient times such as morning, evening, or weekends.

3. Close the school and reopen the school as a charter school or multiple charter schools. This option requires the district to:

a. Close the school and follow procedures of Section 1002.33, Florida Statutes, to reopen the school as a charter or multiple charters.

b. Reassign students who do not choose to attend the charter to other schools.

c. Ensure that the charter includes the following provisions:

(I) The principal selected must have experience turning around a low-performing school;

(II) The principal, assistant principals, or coaches from the closed school may not be hired at the charter school unless assigned to the school for less than one (1) year and the school’s failure to improve cannot be attributed, in whole or in part, to the individual;

(III) Reading and mathematics teachers from the closed school may only be hired if they are highly qualified and effective instructors as set forth in Section 1012.05, Florida Statutes, and as evidenced by sixty-five (65) percent or more of their students achieving learning gains on FCAT for reading and mathematics for elementary teachers or the appropriate content area for middle and high school teachers.

(IV) The district provides the school with a fully released reading coach and a fully released mathematics or science coach and provides additional coaches based on enrollment, unless the charter provides direct instructional support services.

d. In addition to open house events, the school must offer a flexible number of meetings to inform parents of their child’s performance at school. These meetings shall be held at convenient times such as morning, evening, or weekends.

4. Contract with an outside entity to operate the school. This option requires the district to enter into a contract with a management company having a proven success record of improving low-performing schools. The contract must include the following:

a. The principal must have experience turning around a low-performing school.

b. The principal, assistant principals, or coaches from the closed school may not be hired at the new school unless assigned to the school for less than one (1) year and the school's failure to improve cannot be attributed, in whole or in part, to the individual.

c. Reading and mathematics teachers from the closed school may only be hired if they are highly qualified and effective instructors as set forth in Section 1012.05, Florida Statutes, and as evidenced by sixty-five (65) percent or more of their students achieving learning gains on FCAT for reading and mathematics for elementary teachers or the appropriate content area for middle and high school teachers.

d. The district provides the school with a fully released reading coach and a fully released mathematics or science coach and provides additional coaches based on enrollment unless the charter provides direct instructional support services.

e. In addition to open house events, the school must offer a flexible number of meetings to inform parents of their child's performance at school. These meetings shall be held at convenient times for the teacher and the parent

(c) If a school does not exit the Intervene category after one (1) year of implementing one (1) of the options for reconstitution, a different option will be selected by the district each year until all options are exhausted, in which case the school will be closed and students reassigned.

(d) If a school does not exit the lowest-performing category during the initial year of implementing one of the reconstitution options, the school district must submit a plan, for State Board of Education approval, that includes details for implementing a different reconstitution option at the beginning of the next school year, unless the provisions of paragraph (8)(e) of this rule apply.

(e) When a school district demonstrates that a school is likely to move from the lowest-performing category if additional time is provided to implement intervention and support strategies, the State Board of Education shall permit continuation of an implementation option beyond one year.

(f) Each year the Department shall publish notice of the deadline for the selection of a reconstitution option, as provided in paragraphs (8)(b) and (8)(d) of this rule and the submission of a plan for implementation of that option. The notice shall provide a district a minimum of thirty (30) days for selection of the implementation option and a minimum forty-five (45) days after that date for the submission of an implementation plan.

(9) Annual update of DA forms. DA forms will be annually updated and submitted for State Board approval.

(10) The failure to comply with the requirements of this rule will subject a district to the remedies provided in s. 1008.22, F.S. Rulemaking Authority 1001.02(1), 1008.33 FS. Law Implemented 1006.40(2), 1008.33 FS. History–New.

Revised April 7, 2010

2010-2011 DIFFERENTIATED ACCOUNTABILITY SCHOOL CATEGORIES***

CATEGORY I	CATEGORY II
PREVENT I Schools with AYP Counts* from 1 to 3 that have met at least 80% of AYP criteria and belong to one of the following groups: o "A", "B", "C" elementary or middle schools o High schools and high school combination schools with FCAT performance points of 435 or higher o Ungraded schools. ** ➢ *SCHOOL IMPLEMENTS INTERVENTIONS* ➢ *DISTRICT MONITORS PROGRESS AND SUPPORTS SCHOOLS*	**PREVENT II** Schools with AYP Counts* from 1 to 3 that have met less than 80% of AYP criteria and belong to one of the following groups: o "A", "B", "C" elementary or middle schools o High schools and high school combination schools with FCAT performance points of 435 or higher o Ungraded schools. "D" elementary or middle schools with AYP counts less than 4. High schools and high school combination schools with FCAT performance points from 395 to 434 with AYP counts less than 4. ** ➢ *SCHOOL IMPLEMENTS INTERVENTIONS* ➢ *DISTRICT DIRECTS SCHOOL INTERVENTIONS* ➢ *DISTRICT MONITORS PROGRESS AND SUPPORTS SCHOOLS* ➢ *STATE MONITORS DISTRICT'S SUPPORT OF SCHOOLS*
CORRECT I Schools that have AYP Counts* of 4 or greater, have met at least 80% of AYP criteria, and belong to one of the following groups: o "A", "B", "C" elementary or middle schools o High schools and high school combination schools with FCAT performance points of 435 or higher o Ungraded schools. ** ➢ *SCHOOL IMPLEMENTS INTERVENTIONS* ➢ *DISTRICT DIRECTS INTERVENTIONS* ➢ *DISTRICT MONITORS PROGRESS AND SUPPORTS SCHOOLS* ➢ *DISTRICT AND STATE PROVIDE INTENSIVE ONSITE SUPPORT **TO SCHOOLS** IN THE LOWEST 5%*	**CORRECT II** Schools with AYP Counts* of 4 or greater that have met less than 80% of AYP criteria and belong to one of the following groups: o "A", "B", "C" elementary or middle schools o High schools and high school combination schools with FCAT performance points of 435 or higher o Ungraded schools. Schools with AYP Counts of 4 or greater that include o "D" elementary or middle schools o High schools and high school combination schools with FCAT performance points from 395 to 434. Schools regardless of AYP Status that meet the following criteria: o All "F" elementary or middle schools o High schools and high school combination schools with FCAT performance points less than 395. ** ➢ *SCHOOL IMPLEMENTS INTERVENTIONS* ➢ *DISTRICT AND STATE MONITOR PROGRESS AND SUPPORT SCHOOLS* ➢ *DISTRICT AND STATE DIRECT SCHOOL INTERVENTIONS FOR F and LOWEST 5% SCHOOLS*
SCHOOLS NOT REQUIRED TO PARTICIPATE IN DA STRATEGIES Schools that have not missed AYP for at least two consecutive years that are: o "A", "B", "C" elementary or middle schools o High schools and high school Combination schools with FCAT performance points of 435 or higher o Ungraded schools.	**INTERVENE**** ♦ Current "F" elementary or middle schools that have earned at least four "F" grades in the last six school years. ♦ High schools and high school combination schools that have earned less than 395 FCAT performance points and have earned at least four "F" grades in the last six school years (counting the current year's FCAT performance points less than 395 as one year). ♦ "D" Correct II elementary or middle schools or "F" elementary or middle schools or Correct II high schools and high school combination schools with FCAT performance points less than 435 that meet at least 3 of the following criteria: o Percentage of non-proficient students in reading has increased compared to the percentage attained five years earlier o Percentage of non-proficient students in math has increased compared to the percentage attained five years earlier o 65 % or more of the students are not proficient in reading o 65 % or more of the students are not proficient in math. ** ➢ *SCHOOL IMPLEMENTS INTERVENTIONS* ➢ *DISTRICT AND STATE MONITOR ONSITE* ➢ *DISTRICT AND STATE PROVIDE INTENSIVE ONSITE SUPPORT* ➢ *DISTRICT CHOOSES ONE OF FOUR RECONSTITUTION OPTIONS* 1. *Convert school to a district turnaround school* 2. *Reassign students and monitor progress* 3. *Close and reopen as a charter school* 4. *Contract with an outside entity to run the school*

* Schools with FCAT performance points of 435 or higher or ungraded schools enter DA after missing Adequate Yearly Progress (AYP) for two consecutive years starting from 2002-2003. An "AYP Count" value is assigned to all schools. The AYP Count starts at 1 for a school that has missed AYP for two consecutive years. The count increases for each year that a school in DA misses AYP. A school must make AYP two consecutive years to exit DA. If a school in DA then makes AYP one year, the school's AYP Count freezes. However, if that school then misses AYP in the following year, the school's AYP Count resumes. Reaching AYP for two consecutive years resets the AYP Count at zero. To re-enter DA, a school would need to miss AYP for two consecutive years or be graded D or F.

** To exit the Intervene category a school must make significant progress after one year. Significant progress is defined as: 1. "C" elementary and middle schools and high schools with 435 FCAT performance points or greater. 2. The school's AYP performance improves so that at least one subgroup in reading and at least one subgroup in mathematics that previously did not make AYP has made AYP.

***For the purposes of DA, high school status is calculated on FCAT performance only (800 points based on reading, mathematics, writing, and science scores).

E1-5: LOWEST 5% OF TITLE I-ELIGIBLE SCHOOLS (20)

District Name	School Name	DA 2008	DA 2009
ALACHUA	HAWTHORNE MIDDLE/HIGH SCHOOL	NA	CORRECT II
COLUMBIA	COLUMBIA HIGH SCHOOL	PREVENT II	CORRECT II
HAMILTON	HAMILTON COUNTY HIGH SCHOOL	PREVENT II	CORRECT II
HARDEE	HARDEE SENIOR HIGH SCHOOL	PREVENT II	CORRECT II
HENDRY	CLEWISTON HIGH SCHOOL	NA	CORRECT II
HERNANDO	HERNANDO HIGH SCHOOL	PREVENT II	CORRECT II
HERNANDO	CENTRAL HIGH SCHOOL	PREVENT II	CORRECT II
LAKE	LEESBURG HIGH SCHOOL	PREVENT II	CORRECT II
LEVY	WILLISTON HIGH SCHOOL	NA	CORRECT II
ORANGE	EVANS HIGH SCHOOL	PREVENT II	CORRECT II
ORANGE	OAK RIDGE HIGH SCHOOL	PREVENT II	CORRECT II
OSCEOLA	GATEWAY HIGH SCHOOL	PREVENT II	CORRECT II
OSCEOLA	CELEBRATION HIGH SCHOOL	PREVENT II	CORRECT II
OSCEOLA	POINCIANA HIGH SCHOOL	PREVENT II	CORRECT II
PASCO	RIDGEWOOD HIGH SCHOOL	PREVENT II	CORRECT II
PINELLAS	BOCA CIEGA HIGH SCHOOL	PREVENT II	CORRECT II
PINELLAS	DIXIE M. HOLLINS HIGH SCHOOL	PREVENT II	CORRECT II
PINELLAS	LAKEWOOD HIGH SCHOOL	PREVENT II	CORRECT II
PINELLAS	GIBBS HIGH SCHOOL	PREVENT II	CORRECT II
ST. JOHNS	ST. JOHNS TECHNICAL HIGH SCHOOL	NA	CORRECT II

E1-6: PERSISTENTLY LOWEST-ACHIEVING TITLE I SCHOOLS (51)

District Name	School Name	DA 2008	DA 2009
ALACHUA	CHARLES W. DUVAL ELEMENTARY SCHOOL	PREVENT I	CORRECT II
ALACHUA	MARJORIE KINNAN RAWLINGS ELEMENTARY SCHOOL	CORRECT I	CORRECT II
BROWARD	COCONUT CREEK HIGH SCHOOL*	CORRECT II	CORRECT II
BROWARD	LARKDALE ELEMENTARY SCHOOL	INTERVENE	INTERVENE
BROWARD	SUNLAND PARK ELEMENTARY SCHOOL	CORRECT II	CORRECT II
COLLIER	EDEN PARK ELEMENTARY SCHOOL*	NA	CORRECT II
COLLIER	IMMOKALEE HIGH SCHOOL	CORRECT II	CORRECT II
DADE	BOOKER T. WASHINGTON SENIOR HIGH	CORRECT II	CORRECT II
DADE	CHARLES R. DREW MIDDLE SCHOOL	CORRECT II	CORRECT II
DADE	DR. HENRY W. MACK/WEST LITTLE RIVER ELEMENTARY SCHOOL	CORRECT I	CORRECT II
DADE	FREDERICK R. DOUGLASS ELEMENTARY	CORRECT II	CORRECT II
DADE	HOLMES ELEMENTARY SCHOOL	INTERVENE	INTERVENE
DADE	HOMESTEAD SENIOR HIGH SCHOOL	CORRECT II	CORRECT II
DADE	LITTLE RIVER ELEMENTARY SCHOOL	CORRECT II	CORRECT II
DADE	MIAMI CAROL CITY SENIOR HIGH	CORRECT II	CORRECT II
DADE	MIAMI CENTRAL SENIOR HIGH SCHOOL	INTERVENE	INTERVENE
DADE	MIAMI EDISON MIDDLE SCHOOL	CORRECT II	CORRECT II
DADE	MIAMI EDISON SENIOR HIGH SCHOOL	INTERVENE	INTERVENE
DADE	MIAMI JACKSON SENIOR HIGH SCHOOL	CORRECT II	CORRECT II
DADE	MIAMI NORLAND SENIOR HIGH SCHOOL*	CORRECT II	CORRECT II
DADE	MIAMI NORTHWESTERN SENIOR HIGH	PREVENT II	CORRECT II
DADE	MIAMI SOUTHRIDGE SENIOR HIGH*	PREVENT II	CORRECT II
DADE	NORTH COUNTY ELEMENTARY SCHOOL	CORRECT II	CORRECT II
DADE	NORTH MIAMI MIDDLE SCHOOL	CORRECT II	CORRECT II
DADE	NORTH MIAMI SENIOR HIGH SCHOOL*	CORRECT II	CORRECT II
DADE	PINE VILLA ELEMENTARY SCHOOL	CORRECT II	INTERVENE

*Newly funded Title I schools for two years or less (not currently in need of improvement)

As of 12/02/2009

E1-6: PERSISTENTLY LOWEST-ACHIEVING TITLE I SCHOOLS (51)

District Name	School Name	DA 2008	DA 2009
DUVAL	A. PHILIP RANDOLPH ACADEMIES*	PREVENT II	CORRECT II
DUVAL	ANDREW JACKSON HIGH SCHOOL*	CORRECT II	INTERVENE
DUVAL	EDWARD H. WHITE HIGH SCHOOL*	CORRECT II	CORRECT II
DUVAL	JEAN RIBAULT HIGH SCHOOL*	PREVENT II	INTERVENE
DUVAL	LONG BRANCH ELEMENTARY SCHOOL	CORRECT II	CORRECT II
DUVAL	NATHAN B. FORREST HIGH SCHOOL*	CORRECT II	CORRECT II
DUVAL	NORTH SHORE K-8	CORRECT II	INTERVENE
DUVAL	NORTHWESTERN MIDDLE SCHOOL	CORRECT II	CORRECT II
DUVAL	PAXON MIDDLE SCHOOL	CORRECT II	CORRECT II
DUVAL	SMART POPE LIVINGSTON ELEMENTARY	CORRECT II	CORRECT II
DUVAL	WILLIAM M. RAINES HIGH SCHOOL*	CORRECT II	INTERVENE
ESCAMBIA	WARRINGTON MIDDLE SCHOOL	INTERVENE	INTERVENE
GADSDEN	EAST GADSDEN HIGH SCHOOL	CORRECT II	CORRECT II
GADSDEN	WEST GADSDEN HIGH SCHOOL	CORRECT II	CORRECT II
HAMILTON	CENTRAL HAMILTON ELEMENTARY SCHOOL	CORRECT II	CORRECT II
HILLSBOROUGH	FRANKLIN MIDDLE MAGNET SCHOOL	INTERVENE	INTERVENE
HILLSBOROUGH	MIDDLETON HIGH SCHOOL	INTERVENE	INTERVENE
JEFFERSON	JEFFERSON COUNTY MIDDLE/HIGH SCHOOL	PREVENT II	INTERVENE
LEON	AMOS P. GODBY HIGH SCHOOL*	NA	CORRECT II
MADISON	MADISON COUNTY HIGH SCHOOL*	PREVENT II	CORRECT II
ORANGE	MEMORIAL MIDDLE SCHOOL	CORRECT II	CORRECT II
PALM BEACH	GLADES CENTRAL HIGH SCHOOL	CORRECT II	CORRECT II
PALM BEACH	LAKE WORTH HIGH SCHOOL*	NA	INTERVENE
PALM BEACH	ROSENWALD ELEMENTARY SCHOOL	CORRECT II	CORRECT II
POLK	OSCAR J. POPE ELEMENTARY SCHOOL	PREVENT II	CORRECT II
ST. JOHNS	ST. JOHNS TECHNICAL HIGH SCHOOL*	NA	CORRECT II

*Newly funded Title I schools for two years or less (not currently in need of improvement)

As of 12/02/2009

E1-7: <u>Comparison of Intervention Models and Florida Differentiated Accountability Requirements</u>

<table>
<tr><th>Intervention Models</th><th>Florida Differentiated Accountability Interventions</th></tr>
<tr><td>Turnaround Model</td><td></td></tr>
<tr><td>Replace the principal and grant the principal sufficient operational flexibility to implement a fully comprehensive approach in order to substantially improve student achievement outcomes and increase high school graduation rates</td><td>The school's principals and assistant principals shall have a record of increasing student achievement. The principal must have a record of turning around a similar school. (Correct I lowest 5%, Prevent II D, Correct II D, F, and lowest 5%, and Intervene)
The district shall review members of the school leadership team, and replace them as necessary based upon overall school performance. (Prevent I, Correct I, Prevent II D, Correct II A, B, C, and D)
The Department, with district assistance, will review the school leadership team. The Department will make recommendations to the district with respect to replacing members of the leadership team. (Correct I lowest 5%, Correct II F and lowest 5%, and Intervene)</td></tr>
<tr><td>Measure the effectiveness of staff who can work within the turnaround environment to meet the needs of students
Screen all existing staff and rehire no more than 50 percent
Select new staff</td><td>The district shall not employ teachers for the school who are designated less than satisfactory by the teacher evaluation instrument. (Correct I lowest 5%, Prevent II D, Correct II D, F, and lowest 5%, and Intervene)
The district must ensure performance appraisals of instructional personnel are primarily based on student achievement. (Prevent I and II, Correct I and II, and Intervene)
The district must ensure that performance appraisals of the administrative team include student achievement, as measured by the FCAT, as well as goals related to targeted subgroups and school-wide improvement. (Prevent I and II, Correct I and II, and Intervene)
The Department, with assistance from the district, must review and replace teachers who have not contributed to increased learning gains of 65% or greater in reading or mathematics or those teachers who did not contribute to improving the school's performance. (Correct I lowest 5%, Correct II F and lowest 5%, and Intervene)
The Department oversees the staffing of the school prior to the start of school. (Correct I lowest 5%, Correct II F and lowest 5%, and Intervene)</td></tr>
<tr><td>Implement such strategies as financial incentives, increased opportunities for promotion and career growth, and more flexible work conditions designed to recruit, place, and retain staff with skills to turnaround struggling schools</td><td>The district shall provide school-based administrators and instructional coaches with performance pay for raising student achievement. (Correct I lowest 5%, Correct II D, F, and lowest 5%, and Intervene)
The district must develop a plan to encourage teachers and instructional coaches to remain or transfer to lower-performing schools based on increasing learning gains by 65% or greater in reading and mathematics. (Correct I lowest 5%, Correct II lowest 5%, and Intervene)
The district must provide teachers with performance pay for raising student achievement. (Correct I lowest 5%, Correct II D, F, and lowest 5%, and Intervene)
The district must implement a differentiated pay policy that includes differentiation based on district determined factors, including, but not limited to: additional job responsibilities, school demographics, critical shortage areas, and level of job performance difficulties. (Correct I lowest 5%, Correct II D, F, and lowest 5%, and Intervene)</td></tr>
</table>

E1-7: Comparison of Intervention Models and Florida Differentiated Accountability Requirements

• Provide staff with ongoing, high-quality, job-embedded professional development	• The school must ensure that Individual Professional Development Plans (IPDPs) for teachers of targeted subgroups include professional development targeting for the needs of subgroups that did not meet AYP. (Prevent I and Correct I) • The district must ensure that Individual Professional Development Plans (IPDPs) for teachers of targeted subgroups include professional development targeting for the needs of subgroups that did not meet AYP. (Prevent II, Correct II, and Intervene) • The district must ensure that leadership professional development includes professional development targeting the needs of subgroups that did not meet AYP. (Prevent I and II, Correct I and II, and Intervene) • The district must provide a reading coach, mathematics coach, and science coach to develop and model effective lessons, to lead lesson study, and to analyze data. (Correct I lowest 5%, Correct II D, F, and lowest 5%, and Intervene) • The district must ensure that appropriate resources are provided to redesign the master schedule to provide common planning time for data-based decision making, job-embedded professional development, and lesson study. (Correct I lowest 5%, Correct II F and lowest 5%, and Intervene) • The district must provide principals and assistant principals with professional development on monitoring classroom instruction and guiding/supporting/monitoring the activities of instructional coaches. (Prevent I and II, Correct I and II, and Intervene) • The district must provide professional development on Florida's Continuous Improvement Model, Next Generation Sunshine State Standards, Response to Intervention, lesson study, and School Grade and AYP Calculations. (Prevent I and II, Correct I and II, and Intervene)
• Adopt a new governance structure which may include hiring a "turnaround leader"	• The district must establish a position to lead the turnaround effort at the district level. The selected employee will report directly to the superintendent and directly supervise principal(s) at the lowest-performing schools (Correct I lowest 5%, Correct II D, F, and lowest 5%, and Intervene) • Monthly district meetings with the Regional Executive Director (RED) and district department leaders are held to coordinate strategies and resources to assist the lowest-performing schools. (Correct I lowest 5%, Correct II D, F, and lowest 5%, and Intervene)
• Use data to identify and implement an instructional program that is research-based and "vertically aligned" from one grade to the next	• The School Advisory Council (SAC) shall review school performance data and determine the causes of low performance. The SAC shall advise the school on its School Improvement Plan (SIP). (Prevent I and II, Correct I and II, F, D former F, and Intervene) • The school shall complete a mid-year narrative report to analyze progress from baseline to mid-year assessment that is reported to the Department to identify strategies for student interventions. (Prevent I and II, Correct I and II, and Intervene) • The district shall review data to determine the effectiveness of all instructional programs and class offerings. (Prevent I and II, Correct I and II, and Intervene)

E1-7: Comparison of Intervention Models and Florida Differentiated Accountability Requirements

	• The Department will review data to determine the effectiveness of all instructional programs and class offerings. (Correct I lowest 5%, Correct II F and lowest 5%, and Intervene)
• Promote continuous use of student data to inform and differentiate instruction in order to meet the academic needs of individual students	• The School Advisory Council (SAC) shall review school performance data and determine the causes of low performance. The SAC shall advise the school on its School Improvement Plan (SIP). (Prevent I and II, Correct I and II, F, D former F, and Intervene) • The school shall complete a mid-year narrative report to analyze progress from baseline to mid-year assessment that is reported to the Department to identify strategies for student interventions. (Prevent I and II, Correct I and II, and Intervene) • The district administration must ensure that data chats are conducted between district administration and school administration, school administration and teachers, and teachers and students following baseline, mini-, and mid-year assessment. (Prevent I and II, Correct I and II, and Intervene) • The school shall ensure that students are properly placed in rigorous coursework. (Prevent I and II, Correct I and II, and Intervene) • The district must prescribe interim (Benchmark baseline, mid-year, and mini) assessments in reading, mathematics, and science for Level 1-3 students (Prevent I and Correct I in subgroups not making AYP; school-wide for Prevent II, Correct II, and Intervene) • The district must monitor and analyze progress monitoring in reading, mathematics, and science through interim assessments. In the area of reading, this requirement may be filled through the use of Florida Assessments for Instruction in Reading (FAIR). (Prevent II, Correct II, and Intervene)
• Establish schedules and implement strategies that provide increased learning time	• The district must extend the learning day (Correct I lowest 5%, Correct II lowest 5%, and Intervene lowest 5%)
• Provide appropriate social-emotional and community-oriented services and supports for students	• The district will provide opportunities for parents and teachers to meet to discuss the performance of students beyond traditional open house meetings to include evening and weekend times (Intervene)
Restart Model	
• District converts a school or closes and reopens a school under a charter school operator, a charter management organization, or an education management organization that has been selected through a vigorous review process	• The district must choose one of four Intervene options if Intervene school fails to reach a school grade of "C" and achieve AYP with one subgroup in reading and one in mathematics that previously did not reach AYP; one of the four Intervene options is to close and reopen as a charter or multiple charters; another option is to contract with an outside entity to operate the school. (Intervene)
• A restart must enroll, within the grades it serves, any student who wishes to attend the school	• The district must choose one of four Intervene options if Intervene school fails to reach a school grade of "C" and achieve AYP with one subgroup in reading and one in mathematics that previously did not reach AYP; one of the four Intervene options is to close and reopen as a charter or multiple charters; another option is to contract with an outside entity to operate the school. (Intervene)

E1-7: Comparison of Intervention Models and Florida Differentiated Accountability Requirements

School Closure	
• LEA closes a school and enrolls the students who attended the school in other schools in the LEA that are high achieving. Other schools may be charters or new schools for which data is not yet available.	• The district must choose one of four Intervene options if Intervene school fails to reach a school grade of "C" and achieve AYP with one subgroup in reading and one in mathematics that previously did not reach AYP; one of the four Intervene options is to reassign students to another school and monitor student progress. (Intervene)
Transformation Model – Required Activities	
• Replace the principal who led the school prior to commencement of the transformation model	• The school's principals and assistant principals shall have a record of increasing student achievement. The principal must have a record of turning around a similar school. (Correct I lowest 5%, Prevent II D, Correct II D, F, and lowest 5%, and Intervene) • The district shall include student achievement in the evaluation process of district administrators who supervise schools in the lowest 5% and provide performance pay for raising student achievement. (Correct I and II lowest 5%, and Intervene)

• Use rigorous, transparent, and equitable evaluation systems for teachers and Principals that
  ○ Data on student growth as well as other factors
  ○ Are designed and developed with significant teacher and Principal involvement
	• The district must ensure performance appraisals of instructional personnel are primarily based on student achievement. (Prevent I and II, Correct I and II, and Intervene)
	• The district must ensure that performance appraisals of the administrative team include student achievement, as measured by the FCAT, as well as goals related to targeted subgroups and school-wide improvement. (Prevent I and II, Correct I and II, and Intervene)

• Identify and reward school leaders, teachers, and staff who have helped to increase student achievement	• The district shall provide school-based administrators and instructional coaches with performance pay for raising student achievement. (Correct I lowest 5%, Correct II D, F, and lowest 5%, and Intervene) • The district must develop a plan to encourage teachers and instructional coaches to remain or transfer to lower-performing schools based on increasing learning gains by 65% or greater in reading and mathematics. (Correct I lowest 5%, Correct II lowest 5%, and Intervene) • The district must ensure performance appraisals of instructional personnel are primarily based on student achievement. (Prevent I and II, Correct I and II, and Intervene) • The district must ensure that performance appraisals of the administrative team include student achievement, as measured by the FCAT, as well as goals related to targeted subgroups and school-wide improvement. (Prevent I and II, Correct I and II, and Intervene) • The district must provide teachers with performance pay for raising student achievement. (Correct I lowest 5%, Correct II D, F, and lowest 5%, and Intervene) • The district must implement a differentiated pay policy that includes differentiation based on district determined factors, including, but not limited to: additional job responsibilities, school demographics, critical shortage areas, and level of job performance difficulties. (Correct I lowest 5%, Correct II D, F, and lowest 5%, and Intervene)
• Remove school leaders, teachers, and	• The district shall review members of the school leadership team, and

staff who, after ample opportunities, have not increased student achievement	replace them as necessary based upon overall school performance. (Prevent I, Correct I, Prevent II D, Correct II A, B, C, and D, and Intervene) • The Department, with district assistance, will review the school leadership team. The Department will make recommendations to the district with respect to replacing members of the leadership team (Correct I lowest 5%, Correct II D, F, and lowest 5%, and Intervene) • The district shall not employ teachers for the school who are designated less than satisfactory by the teacher evaluation instrument. (Correct I lowest 5%, Prevent II D, Correct II D, F, and lowest 5%, and Intervene) • The district must ensure performance appraisals of instructional personnel are primarily based on student achievement. (Prevent I and II, Correct I and II, and Intervene) • The district must ensure that performance appraisals of the administrative team include student achievement, as measured by the FCAT, as well as goals related to targeted subgroups and school-wide improvement. (Prevent I and II, Correct I and II, and Intervene) • The Department, with assistance from the district, must review and replace teachers who have not contributed to increased learning gains of 65% or greater in reading and mathematics or those teachers who did not contribute to improving the school's performance. (Correct I lowest 5%, Correct II F and lowest 5%, and Intervene) • The Department oversees the staffing of the school prior to the start of school. (Correct I lowest 5%, Correct II F and lowest 5%, and Intervene)
• Provide staff with ongoing, high-quality, job-embedded professional development	• The school must ensure that Individual Professional Development Plans (IPDPs) for teachers of targeted subgroups include professional development targeting for the needs of subgroups that did not meet AYP. (Prevent I and Correct I) • The district must ensure that leadership professional development includes professional development targeting for the needs of subgroups that did not meet AYP. (Prevent I and II, Correct I and II, and Intervene) • The district must provide a reading coach, mathematics coach, and science coach to develop and model effective lessons, to lead lesson study, and to analyze data. (Correct I lowest 5%, Correct II D, F, and lowest 5%, and Intervene) • The district must ensure that appropriate resources are provided to redesign the master schedule to provide common planning time for data-based decision making, job-embedded professional development, and lesson study. (Correct I lowest 5%, Correct II F and lowest 5%, and Intervene) • The district must provide principals and assistant principals with professional development on monitoring classroom instruction and guiding/supporting/monitoring the activities of instructional coaches. (Prevent I and II, Correct I and II, and Intervene) • The district must provide professional development on Florida's Continuous Improvement Model, Next Generation Sunshine State

E1-7: Comparison of Intervention Models and Florida Differentiated Accountability Requirements

	Standards, Response to Intervention, lesson study, and School Grade and AYP Calculations. (Prevent I and II, Correct I and II, and Intervene)
• Implement strategies such as financial incentives, increased opportunities for promotion and career growth, and more flexible work conditions designed to recruit, place, and retain staff with the skills necessary to meet the needs of students in a transformation school	• The district shall provide school-based administrators and instructional coaches with performance pay for raising student achievement. (Correct I lowest 5%, Correct II D, F, and lowest 5%, and Intervene) • The district must develop a plan to encourage teachers and instructional coaches to remain or transfer to lower-performing schools based on increasing learning gains by 65% or greater in reading and mathematics. (Correct I lowest 5%, Correct II lowest 5%, and Intervene) • The district must provide teachers with performance pay for raising student achievement. (Correct I lowest 5%, Correct II D, F, and lowest 5%, and Intervene) • The district must implement a differentiated pay policy that includes differentiation based on district determined factors, including, but not limited to: additional job responsibilities, school demographics, critical shortage areas, and level of job performance difficulties. (Correct I lowest 5%, Correct II D, F, and lowest 5%, and Intervene) • The district must extend the learning day. (Correct I lowest 5%, Correct II lowest 5%, and Intervene)
• Use data to identify and implement an instructional program that is research-based and "vertically aligned" from one grade to the next as well as aligned with state academic standards	• The School Advisory Council (SAC) shall review school performance data and determine the causes of low performance. The SAC shall advise the school on its School Improvement Plan (SIP). (Prevent I and II, Correct I and II, F, D former F, and Intervene) • The school shall complete a mid-year narrative report to analyze progress from baseline to mid-year assessment that is reported to the Department to identify strategies for student interventions. (Prevent I and II, Correct I and II, and Intervene) • The district shall review data to determine the effectiveness of all instructional programs and class offerings. (Prevent I and II, Correct I and II, and Intervene) • The Department will review data to determine the effectiveness of all instructional programs and class offerings. (Correct I lowest 5%, Correct II F and lowest 5%, and Intervene) • The school shall ensure that students are properly placed in rigorous coursework. (Prevent I and II, Correct I and II, and Intervene)
• Promote the continuous use of student data to inform and differentiate instruction in order to meet the academic needs of individual students	• The School Advisory Council (SAC) shall review school performance data and determine the causes of low performance. The SAC shall advise the school on its School Improvement Plan (SIP). (Prevent I and II, Correct I and II, F, D former F, and Intervene) • The school shall complete a mid-year narrative report to analyze progress from baseline to mid-year assessment that is reported to the Department to identify strategies for student interventions. (Prevent I and II, Correct I and II, and Intervene) • The district must prescribe interim (Benchmark baseline, mid-year, and mini) assessments in reading, mathematics, and science for Level 1-3 students. (Prevent I and Correct I in subgroups not making AYP; school-wide for Prevent II, Correct II, and Intervene)

E1-7: Comparison of Intervention Models and Florida Differentiated Accountability Requirements

	• The district administration must ensure that data chats are conducted between district administration and school administration, school administration and teachers, and teachers and students following baseline, mini-, and mid-year assessment. (Prevent I and II, Correct I and II, and Intervene) • The district must monitor and analyze progress monitoring in reading, mathematics, and science through interim assessments. In the area of reading this requirement may be fulfilled through the use of Florida Assessments for Instruction in Reading (FAIR). (Prevent II, Correct II, and Intervene)
• To increase learning, districts must establish schedules and implement strategies that provide increased learning time	• The district must ensure that appropriate resources are provided to redesign the master schedule to provide common planning time for data-based decision making, job-embedded professional development, and lesson study. (Correct I lowest 5%, Correct II F and lowest 5%, and Intervene)
• Provide ongoing mechanisms for family and community engagement	• The district shall recruit representatives of the community to establish a Community Assessment Team (CAT) to review school performance data, determine the cause for low performance for each school with a grade of F and each school in the Intervene category, and advise the district on its District Improvement and Assistance Plan. The Department's Regional Executive Directors shall participate in CAT meetings. (Correct II F and Intervene)
• Districts must give schools sufficient operational flexibility to implement fully a comprehensive and sustainable student achievement system	• The Department does not dictate curriculum or programs selected; however, Regional Teams review the effectiveness of previously used curriculum and programs.
• Ensure schools receive ongoing intensive technical assistance	• Purpose and role of Regional Teams
Transformational Model	
• Provide additional compensation to attract and retain staff with the skills necessary to transform a struggling school	• The district must ensure performance appraisals of instructional personnel are primarily based on student achievement. (Prevent I and II, Correct I and II, and Intervene) • The district must ensure that performance appraisals of the administrative team include student achievement, as measured by the FCAT, as well as goals related to targeted subgroups and school-wide improvement. (Prevent I and II, Correct I and II, and Intervene) • The district shall provide school-based administrators and instructional coaches with performance pay for raising student achievement. (Correct I lowest 5%, Correct II D, F, and lowest 5%, and Intervene) • The district must provide teachers with performance pay for raising student achievement. (Correct I lowest 5%, Correct II D, F, and lowest 5%, and Intervene) • The district must implement a differentiated pay policy that includes differentiation based on district determined factors, including, but not limited to: additional job responsibilities, school demographics, critical shortage areas, and level of job performance difficulties. (Correct I lowest 5%, Correct II D, F, and lowest 5%, and Intervene)
• Institute a system for measuring changes in instructional practices resulting from	• Mid-year assessments and Florida Continuous Improvement Model are used to measure changes in instructional practices

professional development	
• Ensure that a school is not required to accept a teacher without the mutual consent of the teacher and Principal, regardless of the teacher's seniority	• Will be included in Florida's Race to the Top/Student Improvement Grant applications
• Conduct periodic reviews to ensure the curriculum is implemented with fidelity and is having the intended impact on student achievement	• The district must provide principals and assistant principals with professional development on monitoring classroom instruction and guiding/supporting/monitoring the activities of instructional coaches. (Prevent I and II, Correct I and II, and Intervene) • The school must provide quarterly updates on the implementation of the School Improvement Plan to the School Advisory Council and make updates to the School Improvement Plan. (Prevent I and II, Correct I and II, and Intervene) • The school leadership team must monitor implementation of the School Improvement Plan. (Prevent I and II, Correct I and II, and Intervene) • The school must participate in a comprehensive instructional monitoring process. (Prevent I and II, Correct I and II, and Intervene) • The district must develop a comprehensive instructional monitoring process and follow-up that includes classroom, school leadership team, and school-wide monitoring. (Prevent I and II, Correct I and II, and Intervene) • The district must ensure that schools demonstrating the greatest need, based on data analysis, receive the highest percentage of resources. (Prevent II, Correct II, and Intervene) • The Department shall report progress bi-monthly to the State Board of Education. (Correct I lowest 5%, Correct II F and lowest 5%, and Intervene)
• Implement a school wide "Response to Intervention" model	• The school must implement Florida's Response to Intervention model set forth in the Statewide RtI Implementation Plan. (Prevent I and II, Correct I and II, and Intervene)
• Provide additional supports and professional development to teachers and principals in order to implement effective strategies to support students with disabilities in the least restrictive environment and to ensure that limited English proficient students acquire language skills to master academic content	• The school must ensure that Individual Professional Development Plans (IPDPs) for teachers of targeted subgroups include professional development targeting for the needs of subgroups that did not meet AYP. (Prevent I and Correct I) • The district ensures that IPDPs for teachers of targeted subgroups include professional development plans that target the needs of subgroups not making AYP. (Prevent II, Correct II, and Intervene) • The district must ensure that leadership professional development includes professional development that targets the needs of subgroups that did not meet AYP. (Prevent I and II, Correct I and II, and Intervene) • The district must ensure that appropriate resources are provided to redesign the master schedule to provide common planning time for data-based decision making, job-embedded professional development, and lesson study. (Correct I lowest 5%, Correct II F and lowest 5%, and Intervene)
• Use and integrate technology-based supports and interventions as part of the	• Districts use various technology-based support and interventions in reading, math, and science. These are selected by districts and

E1-7: Comparison of Intervention Models and Florida Differentiated Accountability Requirements

instructional program	schools and reviewed for effectiveness by the Department.
• In secondary schools, increase rigor by offering advanced coursework opportunities	• The school shall ensure that students are properly placed in rigorous coursework. (Prevent I and II, Correct I and II, and Intervene)
• In secondary schools, improve student transition from middle to high school	• N/A
• In secondary schools, increase graduation rates through the implementation of various programs	• As a requirement of new high school accountability, schools will be graded based on the number of students enrolled and passing advanced courses and graduation rate. • Targeted initiatives for Florida's RTTT and School Improvement Grant applications.
• In secondary schools, establish early warning systems to identify students who may be at risk of failing to achieve high standards or graduate	• Implement statewide initiative for RTTT application for data systems.
• Partner with various organizations to create safe-school environments	• Targeted initiatives for Florida's RTTT and School Improvement Grant applications.
• Extend or restructure the school day to add time for additional activities, such as advisory periods	• District will extend the learning day (Correct I lowest 5%, Correct II lowest 5%, Intervene lowest 5%)
• Implement approaches to improve school climate and discipline, such as positive behavioral supports or taking steps to eliminate bullying	• The school must implement Florida's Response to Intervention model set forth in the Statewide RtI Implementation Plan. (Prevent I and II, Correct I and II, and Intervene)Targeted initiatives for Florida's RTTT and School Improvement Grant applications.
• Expand the school program to offer full-day kindergarten or pre-kindergarten	• Targeted initiatives for Florida's RTTT and School Improvement Grant applications.
• Allow school to be run under a new governance arrangement	• The district must choose one of four Intervene options if Intervene school fails to reach a school grade of "C" and achieve AYP with one subgroup in reading and one in mathematics that previously did not reach AYP; one of the four Intervene options is to reassign students to another school and monitor the student's progress (Intervene)
• Implement a per-pupil school-based budget formula that is weighted based on student needs	• The Department will review budget allocations and alignment of resources. (Correct I lowest 5%, Correct II F and lowest 5%, and Intervene)

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Late June/Early July

Regions analyze released data to determine success and short-comings of persistently lowest-achieving schools

Mid-late July

REDs meet with districts to recommend personnel changes in persistently lowest-achieving schools using learning gains

Late July/ Early August

PD offered to coaches/teachers in persistently lowest-achieving schools

Mid-August

REDs meet with districts to review status of DA compliance and create district wide strategies and systems to support

Late August/ September

Regions lead 2-day Instructional Review with district and school leadership teams in persistently lowest-achieving schools to define action steps/ person responsible/ timeline

Mid-September

School Improvement Plan due

September

Baseline Assessment administered in Reading, Math, Science and Writing

Regional Teams provide onsite and district support with implementing action plans from Instructional Review

March

Mid November/ December

The first follow-up Instructional Review conducted in persistently lowest-achieving schools to analyze extent of implementation of action plans from August/September Instructional Review

December

Mid year assessments administered in Reading, Math, Science and Writing. Midyear reports completed to analyze progress between baseline and mid-year report.

April

Students take Florida Comprehensive Assessment Test (FCAT)

May

Second and final Instructional Review is conducted n persistently lowest-achieving schools to analyze extent of implementation of action plans from August to September Instructional Review

FLORIDA DEPARTMENT OF EDUCATION

E1-9: Differentiated Accountability Strategies and Support

Proposed for 2010-2011

Revised: May 25, 2010

SCHOOL IMPROVEMENT PLANNING					
	Prevent I	**Correct I**	**Prevent II**	**Correct II**	**Intervene**
The district must create a district-based leadership team that includes the superintendent, associate superintendent(s) of curriculum, general and special education leaders, curriculum specialists, behavior specialists, student services personnel, human resources and professional development leaders, and specialists in other areas relevant to the school's circumstances, such as assessment, English Language Learners, and gifted learners. The team shall develop, support, and facilitate the implementation of policies and procedures that guide school-based teams with direct support systems for each school principal, and establish systems for Problem Solving and Response to Instruction/Intervention (RtI) through district-wide consensus building, infrastructure development, and implementation.	X	X	X	X	X
In conjunction with the district-based leadership team, the School Advisory Council (SAC) shall assist the school leadership team in the development of the School Improvement Plan (SIP). The district-based leadership team is responsible for ensuring that the SIP is implemented.	X *	X *	X *	X *	X
* Non-Title I A, B, or C schools may receive a waiver from FDOE if the district/school can demonstrate that their existing template provides strategies for subgroups that did not meet AYP in the area of data analysis, RtI, and increasing student achievement.					
The SAC shall review school performance data and determine the causes of low performance. The SAC shall advise the school on its SIP.	X	X	X	X	X
The SIP shall be approved by the district through peer review.	X	X	X	X	X
The district-based leadership team shall monitor the implementation of the SIP.	X	X	X	X	X

Strategies and Support for Differentiated Accountability

SCHOOL IMPROVEMENT PLANNING					
	Prevent I	**Correct I**	**Prevent II**	**Correct II**	**Intervene**
The Department will review, approve, and monitor SIPs.		(Lowest 5%)		(F and Lowest 5%)	X (Lowest 5%)
The district shall recruit representatives of the community to establish a Community Assessment Team (CAT) to review school performance data, determine the cause for low performance for each school with a grade of F and each school in the Intervene category, and advise the district on its District Improvement and Assistance Plan. The Department's Regional Executive Directors shall participate in CAT meetings.				(F only)	X
The district shall develop and implement a District Improvement and Assistance Plan.	X	X	X	X	X
The Department will review budget allocations and alignment of resources.		(Lowest 5%)		(F and Lowest 5%)	X (Lowest 5%)
The school shall complete a mid-year narrative report to analyze progress from the baseline to mid-year assessment that is reported to the Department to identify strategies for student interventions.	X *	X *	X *	X *	X
* Non-Title I and Title I A, B, and C schools are required to complete the report only for subgroups not making AYP.					
The school shall establish a Literacy Leadership Team consistent with the K-12 Comprehensive Research-Based Reading Plan.	X	X	X	X	X
The school must offer a flexible number of meetings to inform parents of their child's performance at school. These meetings shall be held at convenient times for the teacher and parent.		(Lowest 5%)		(Lowest 5%)	X (Lowest 5%)

Strategies and Support for Differentiated Accountability

LEADERSHIP

	Prevent I	Correct I	Prevent II	Correct II	Intervene
The school's principal and assistant principals shall have a record of increasing student achievement. The principal must have a record of turning around a similar school.		(Lowest 5%)	(D)	(D, F, and Lowest 5%)	X (Lowest 5%)
The district shall review members of the school leadership team, and replace them as necessary based upon overall school performance. The review and replacement process must be fair, consistent, transparent, and reliable.	X	X	(D)	X (A, B, C, and D)	
The Department, with district assistance, will review the school leadership team. The Department will make recommendations to the district with respect to replacing members of the leadership team.* The review and replacement process must be fair, consistent, transparent, and reliable.		(Lowest 5%)		(F and Lowest 5%)	X (Lowest 5%)

*The following guidelines should be considered when determining if a change in leadership is necessary:

- The school grade declines or there is consistent failure (D or F) under the same leadership for 2 years: The principal should be replaced.
- The school grade declines under the same leadership for 1 year and the percentage of Annual Yearly Progress (AYP) Criteria Met decreases: The principal should be replaced.
- The school grade declines under the same leadership for 1 year and the learning gains in reading and mathematics decline: The principal should be replaced.
- The school grade declines under the same leadership for 1 year but the learning gains in reading and mathematics increase: The principal has one more year to show growth.
- The school grade declines under the same leadership for 1 year and the percentage of AYP Criteria Met increases: The principal has one more year to show growth.

	Prevent I	Correct I	Prevent II	Correct II	Intervene
The district shall provide school-based administrators and instructional coaches with performance pay for raising student achievement. The performance pay process must be fair, consistent, transparent, and reliable.		(Lowest 5%)		(D, F, and Lowest 5%)	X (Lowest 5%)
The district shall include student achievement in the evaluation process of district administrators who supervise schools in the Lowest 5% and provide performance pay for raising student achievement. The performance pay process must be fair, consistent, transparent, and reliable.		(Lowest 5%)		(Lowest 5%)	X (Lowest 5%)

Strategies and Support for Differentiated Accountability

EDUCATOR QUALITY	Prevent I	Correct I	Prevent II	Correct II	Intervene
Teachers assigned to subgroups not making AYP must be highly qualified and certified in-field.	X	X	X	X	X
All paraprofessionals must be highly qualified.	X *	X *	X *	X *	X *
* By the 2011-2012 school year, non-Title I schools are required to have highly-qualified paraprofessionals, as defined by No Child Left Behind (NCLB), who instruct subgroups who did not make AYP.					
The district shall not employ teachers for the school who are designated less than satisfactory by the teacher evaluation instrument.		(Lowest 5%)	(D)	(D, F, and Lowest 5%)	X (Lowest 5%)
The school must be fully staffed by the first day of school.		(Lowest 5%)	(D)	(D, F, and Lowest 5%)	X (Lowest 5%)
The district must develop a plan to encourage teachers and instructional coaches to remain or transfer to lower-performing schools based on increasing learning gains* by 65% or greater in reading and mathematics. The plan must be fair, consistent, transparent, and reliable.		(Lowest 5%)		(Lowest 5%)	X (Lowest 5%)
Learning gains can be based on a three year average of FCAT data, as determined by the following methods: (1) Improving an achievement level, e.g., from Achievement Level 1 to Achievement Level 2. (2) Maintaining an Achievement Level 3, 4, or 5. (3) Showing adequate Developmental Scale Score (DSS) change if students stay in Achievement Levels 1 or 2.					
The district must provide a reading coach, mathematics coach, and science coach to develop and model effective lessons, to lead Lesson Study, to analyze data, and provide professional development on the Common Core/Next Generation Sunshine State Standards.		(Lowest 5%)		(*D, F, and Lowest 5%)	X (Lowest 5%)
* The district may receive a waiver from the Department if the district can demonstrate how sustained and direct support will be provided to teachers at Correct II D and F schools (excluding those in the Lowest 5%).					
Instructional coaches must maintain a daily log of activities and the school and district leadership teams must monitor these logs. The district must ensure that coaches do not provide pull-out instruction outside the context of providing professional development for teachers and do not teach more than one class.		(Lowest 5%)		(D, F, and Lowest 5%)	X (Lowest 5%)

Strategies and Support for Differentiated Accountability

EDUCATOR QUALITY	Prevent I	Correct I	Prevent II	Correct II	Intervene
The district must ensure that performance appraisals of instructional personnel are primarily based on student achievement. The appraisals must be fair, consistent, transparent, and reliable.	X	X	X	X	X
The district must ensure that performance appraisals of the administrative team include student achievement, as measured by the FCAT, as well as goals related to targeted subgroups and school-wide improvement.	X	X	X	X	X
The district must train staff on performance appraisal instruments and ensure that the performance appraisal process is implemented.	X	X	X	X	X
The district must provide teachers with performance pay for raising student achievement. The performance pay system must be fair, consistent, transparent, and reliable.		(Lowest 5%)		(D, F, and Lowest 5%)	X (Lowest 5%)
The Department, with assistance from the district, must review and replace teachers who have not contributed to increased Learning Gains* of 65% or greater in reading and mathematics or those teachers who did not contribute to improving the school's performance. The review and replacement process must be fair, consistent, transparent, and reliable.		(Lowest 5%)		(F and Lowest 5%)	X (Lowest 5%)
Learning gains can be based on a three year average of FCAT data, as determined by the following methods: (1) Improving an achievement level, e.g., from Achievement Level 1 to Achievement Level 2. (2) Maintaining an Achievement Level 3, 4, or 5. (3) Showing adequate Developmental Scale Score (DSS) change if students stay in Achievement Levels 1 or 2.					
The Department oversees the staffing of the school prior to the start of school.		(Lowest 5%)		(F and Lowest 5%)	X (Lowest 5%)

Strategies and Support for Differentiated Accountability

The district must implement a differentiated pay policy that includes differentiation based on district determined factors, including, but not limited to: additional job responsibilities, school demographics, critical shortage areas, and level of job performance difficulties. The policy must be fair, consistent, transparent, and reliable.		(Lowest 5%)		(D, F, and Lowest 5%)	X (Lowest 5%)
The district must ensure that mid-year vacancies are filled.	X	X	X	X	X

PROFESSIONAL DEVELOPMENT	Prevent I	Correct I	Prevent II	Correct II	Intervene
The school must ensure that Individual Professional Development Plans (IPDPs) for teachers of targeted subgroups include professional development targeting the needs of subgroups that did not meet AYP.	X	X			
The district ensures that IPDPs for teachers of targeted subgroups include professional development that targets the needs of subgroups not making AYP.			X	X	X
The district must participate in a sample of IPDP meetings.			X	X	X
The district must ensure that leadership professional development includes professional development that targets the needs of subgroups that did not meet AYP.	X	X	X	X	X
The district must ensure that appropriate resources are provided to redesign the master schedule to allow for common planning time for data-based decision making, job-embedded professional development on the Common Core/Next Generation Sunshine State Standards, and Lesson Study.		(Lowest 5%)		(F and Lowest 5%)	X (Lowest 5%)
The district must provide principals and assistant principals with professional development on monitoring classroom instruction and guiding/supporting/monitoring the activities of instructional coaches.	X	X	X	X	X
The district must provide professional development on Florida's Continuous Improvement Model, Common Core/Next Generation Sunshine State Standards, Response to Intervention, Lesson Study, and School Grade and AYP Calculations.	X	X	X	X	X
The district must create and maintain a pool of highly-qualified reading, mathematics, and science teachers and instructional coaches to serve in Differentiated Accountability schools.		(Lowest 5%)		(Lowest 5%)	X (Lowest 5%)

Strategies and Support for Differentiated Accountability

The district must offer a summer professional development academy that is developed in conjunction with the Department for school administrators, teachers, and instructional coaches.		(Lowest 5%)		(Lowest 5%)	X (Lowest 5%)

Strategies and Support for Differentiated Accountability

CURRICULUM ALIGNED AND PACED					
	Prevent I	**Correct I**	**Prevent II**	**Correct II**	**Intervene**
District or school develops instructional pacing guides that are aligned to the Common Core/Next Generation Sunshine State Standards in reading, mathematics, science, and writing.	X	X	X	X	X
The Department will review the instructional pacing guide aligned to the Common Core/Next Generation Sunshine State Standards.		(Lowest 5%)		(F and Lowest 5%)	X (Lowest 5%)
The school shall ensure that students are properly placed in rigorous coursework.	X	X	X	X	X
The school must implement the district K-12 Reading Plan.	X	X	X	X	X
The district must implement the K-12 Reading Plan.	X	X	X	X	X
The district shall review data to determine the effectiveness of all instructional programs and class offerings.	X	X	X	X	X
The Department will review data to determine the effectiveness of all instructional programs and class offerings.		(Lowest 5%)		(F and Lowest 5%)	X (Lowest 5%)
The district must extend the learning day.		(Lowest 5%)		(Lowest 5%)	(Lowest 5%)

FLORIDA'S CONTINUOUS IMPROVEMENT MODEL

	Prevent I	Correct I	Prevent II	Correct II	Intervene
The school must implement Florida's Response to Intervention model set forth in the Statewide RtI Implementation Plan.	X	X	X	X	X
The school must implement Florida's Continuous Improvement Model (FCIM).	X (FCIM implemented with subgroups not making AYP)	X (FCIM implemented with subgroups not making AYP)	X (FCIM implemented school-wide)	X (FCIM implemented school-wide)	X (FCIM implemented school-wide)
The district must monitor implementation of Florida's Continuous Improvement Model (FCIM).	X (FCIM implemented with subgroups not making AYP)	X (FCIM implemented with subgroups not making AYP)	X (FCIM implemented school-wide)	X (FCIM implemented school-wide)	X (FCIM implemented school-wide)
The district must ensure real-time access to student achievement data.	X	X	X	X	X
The district must prescribe interim (Benchmark baseline, mid-year, and mini) assessments in reading, mathematics, and science for Level 1-3 students.	X (Only subgroups not making AYP)	X (Only subgroups not making AYP)	X (School-wide)	X (School-wide)	X (School-wide)
The district must monitor and analyze progress monitoring data in reading, mathematics, and science through interim assessments. In the area of reading, this requirement may be fulfilled through the use of the Florida Assessments for Instruction in Reading (FAIR).			X	X	X
The district must participate in the Florida Assessments for Instruction in Reading (FAIR) for Levels 1-3* students.				X *	X *

* The district may receive a waiver for Level 3 students from the Department if the district can demonstrate that the current reading assessment used in Correct II and Intervene schools is reliable, aligned to the NGSSS Benchmarks, and predicts FCAT performance.

FLORIDA'S CONTINUOUS IMPROVEMENT MODEL					
	Prevent I	Correct I	Prevent II	Correct II	Intervene
The district administration must ensure that data chats are conducted between district administration and school administration, school administration and teachers, and teachers and students following baseline, mini-, and mid-year assessments.	X	X	X	X	X

MONITORING PROCESSES AND PLANS

	Prevent I	Correct I	Prevent II	Correct II	Intervene
The school must provide quarterly updates on the implementation of the School Improvement Plan to the School Advisory Council and make updates to the School Improvement Plan.	X	X	X	X	X
The school leadership team must monitor implementation of the School Improvement Plan.	X	X	X	X	
The school must participate in a comprehensive instructional monitoring process.	X	X	X	X	X
The district must develop a comprehensive instructional monitoring process and follow-up that includes classroom, school leadership team, and school-wide monitoring.	X	X	X	X	X
The district must ensure that schools demonstrating the greatest need, based on data analysis, receive the highest percentage of resources.			X	X	X
The Department will report progress bi-monthly to the State Board of Education.		(Lowest 5%)		(F and Lowest 5%)	X (Lowest 5%)
Monthly district meetings with the Regional Executive Director (RED) and district department leaders are held to coordinate strategies and resources to assist lowest-performing schools.		(Lowest 5%)		(Lowest 5%)	X (Lowest 5%)
The district must establish a position to lead the turnaround effort at the district level. The selected employee will report directly to the superintendent and directly supervise principals at the lowest-performing schools.		(Lowest 5%)		(Lowest 5%)	X (Lowest 5%)

REGIONAL EXECUTIVE DIRECTOR

Application Deadline:
Salary Range: Negotiable
Contact: Deputy Chancellor for School Improvement and Student Achievement
Phone: 850-245-0422
Fax: 850-245-0803
Job Description: See below for qualifications information.
Open Position:

All applicants must submit a letter of interest, qualifications document, and a resume indicating qualifications as they SPECIFICALLY RELATE to the listed criteria for this position via email or fax. You must indicate in your letter if you are claiming Veterans' Preference. It is the responsibility of the applicant to submit sufficient information to enable the screening committee to effectively evaluate his/her education, training, and experience.

QUALIFICATIONS

1. Master's degree (from an accredited institution)
2. Certification in educational leadership or administration and supervision
3. Three (3) years of education leadership, management, and supervision leading successful school improvement/reform efforts in a demographically diverse public school and/or district
4. Demonstrated success working as a change agent with a record of turning around low-performing, high-poverty schools as a principal and/or district administrator

KNOWLEDGE, SKILLS AND ABILITIES

- Keen expertise and experience in the turnaround process as it pertains to low-performing schools
- Deep understanding of what quality teaching and learning "looks like" in the classroom
- Knowledge of lesson study and Response to Intervention (RtI) process and experience with implementation
- Ability to identify strategies and develop systems to improve classroom instruction at the district and school level
- Ability to supervise and coordinate efforts of employees to reach Florida Department of Education (FDOE) program and agency goals
- Ability to coordinate program activities with other department priorities and delegate work assignments as needed
- Ability to develop monitoring systems with district and school leadership teams
- Knowledge of Sunshine State Standards
- Ability to use and analyze data to determine instructional needs and direct academic intervention.
- Assist with developing master schedules to support student achievement
- Ability to monitor budgets and use funds to improve student achievement
- Knowledge of various evidence-based instructional coaching approaches
- Knowledge of how to evaluate and shape district and school cultures

- Ability to coach superintendents and principals in successful turnaround
- Strong interpersonal skills that lead to an effective working relationship with all stakeholders
- Strong written and verbal communication skills
- Strong presentation skills with the ability to deliver technical assistance in a form understood by customers and stakeholders
- Strong organizational and problem-solving skills
- Ability to work autonomously
- Demonstrated skill in ensuring accountability for all stakeholders in the school reform effort
- Strong analytic and interpretation skills
- Ability to orchestrate change
- Ability to meet tight timeframes and balance multiple, competing priorities while maintaining goal directed behavior/performance
- In-depth knowledge of state and federal laws, rules, policies, and procedures related to school improvement and Differentiated Accountability
- Strong knowledge of Microsoft Office programs (Word, Excel, PowerPoint)
- Strong work ethic
- Deep belief and passion that all students can succeed academically if provided the right learning environment

An additional requirement of the job is to be able to travel both in and out of state at least 25-50% of the time for state and federal meetings, workshops/conferences, and site related monitoring and instructional reviews.

REPORTS TO:

Deputy Chancellor for School Improvement and Student Achievement

JOB GOAL:

Provide leadership of the Differentiated Accountability Plan for schools and districts in the region. The position will work directly with district and school leadership and staff in their assigned regions; assure and monitor compliance with state and federal requirements; and provide overall assistance, coordination, and direction to senior administration to improve student achievement in the state's lowest performing schools.

SUPERVISES:

Regional Instructional Specialists and Reading Coordinators

PERFORMANCE RESPONSIBILITIES:

- Manifests a professional code of ethics and values
- Promote, support, and determine DA compliance for districts and schools
- Provide a non-threatening, open, professional and collaborative work relationship and

leadership oversight between the Department, school district(s), and schools categorized in the DA Plan for the purpose of school improvement and implementation of DA for academic accountability
• Assist districts in building capacity to critically assess and selectively incorporate evidence-based strategies to support school improvement by coordinating meetings, regional trainings, and professional development for identified schools within the region
• Provide overall coordination, progress monitoring, and direction to all the instructional specialists, including the use of and constructing protocols for district/school faculty and leadership team development
• Provide leadership for the regional team (comprised of internal and external customers and local stakeholders) in their efforts to assist school districts and schools with their systemic reform and accountability efforts
• Provide technical assistance and coaching to schools, School Advisory Councils, Community Assessment Teams, district offices, and school boards
• Provide assistance with organizational change; Florida Continuous Improvement Model (FCIM), lesson study, program and instructional monitoring, RtI, and the teaching of standards/benchmarks.
• Work collaboratively with districts in the development, implementation, monitoring, and evaluation of plans required by the State Board of Education (SBE)
• Conduct instructional reviews, review school assessment trend data, School Improvement Plan (SIP), and District Improvement Plan (DIP)
• Continually analyze student performance data to drive school improvement strategies
• Prepare detailed policy and data analysis, reports, and evaluations on the status of DA for the Commissioner and State Board of Education
• Responsible for maintaining timely and accurate information and accountable for the quality of information maintained by DA Regional Teams
• Participate in weekly conference calls and bi-monthly meetings in Tallahassee
• Supervise and guide the work of the DA Regional Team
• Perform other duties and responsibilities as assigned by supervisor

TERMS OF EMPLOYMENT:

Non-bargaining unit compensation plan, twelve months, 8.0 hours per day

EVALUATION:

Performance of this job will be evaluated in accordance with provisions of the Florida Department of Education's policy on evaluation of personnel. Student achievement must be demonstrated in the state's lowest-performing schools that are assigned to the DA Regional Executive Director.

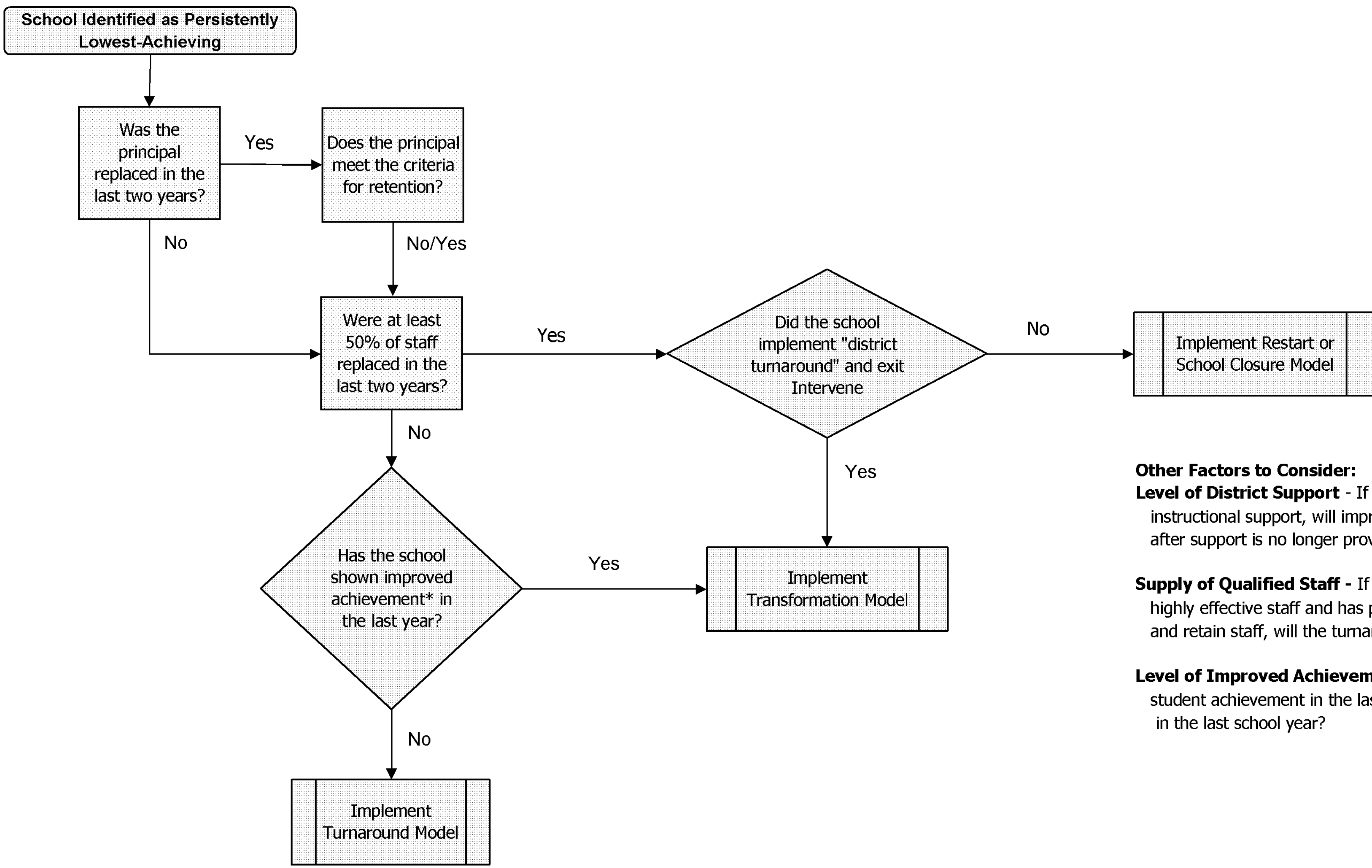
E2-1: 2008-2009 Progress in Targeted Schools

REGION	DISTRICT	SCHOOL	TARGETED STATUS	2008 School Grade	2008 AYP Criteria Met	2008 DA Category	2009 School Grade	Change in School Grade	2009 AYP Criteria Met	Change in AYP % Points	2009 DA Category	Reading +/- meeting high standards	Math +/- meeting high standards	Writing +/- meeting high standards	Science +/- meeting high standards	Reading +/- making learning gains	Math +/- making learning gains
1	ESCAMBIA	WARRINGTON MIDDLE SCHOOL	INTERVENE	D	69	INTERVENE	C	+ 1 Letter Grade	82	+13	INTERVENE	+8	+3	+1	+1	+10	+5
1	LEON	BELLE VUE MIDDLE SCHOOL	INTERVENE	D	72	INTERVENE	C	+ 1 Letter Grade	82	+10	INTERVENE	+1	+5	+6	0	+5	+6
1	ESCAMBIA	GEORGE S. HALLMARK ELEMENTARY	F	F	82	CORRECT II	A	+ 4 Letter Grades	100	+18	PREVENT I	+21	+25	+24	+36	+14	+8
1	ESCAMBIA	NAVY POINT ELEMENTARY SCHOOL	F	F	77	CORRECT II	A	+ 4 Letter Grades	100	+23	CORRECT I	+17	+29	+45	+2	+27	+33
1	GADSDEN	WEST GADSDEN HIGH SCHOOL	F	F	74	CORRECT II	F	No Change	85	+11	CORRECT II	+8	+7	+1	-5	+2	-3
2	DUVAL	ANDREW JACKSON HIGH SCHOOL	F	F	49	CORRECT II	F	No Change	59	+10	INTERVENE	-6	-4	-2	-2	-7	0
2	DUVAL	BILTMORE ELEMENTARY SCHOOL	F	F	77	CORRECT II	C	+ 2 Letter Grades	92	+15	CORRECT I	-1	+25	+17	-11	+32	+27
2	DUVAL	EDWARD H. WHITE HIGH SCHOOL	F	F	69	CORRECT II	D	+ 1 Letter Grade	51	-18	CORRECT II	-2	+1	-5	+7	-1	+2
2	DUVAL	GEORGE WASHINGTON CARVER ELEMENTARY	F	F	74	CORRECT II	B	+ 3 Letter Grades	87	+13	CORRECT I	-5	+20	+8	+24	+4	+45
2	DUVAL	MARTIN LUTHER KING, JUNIOR ELEMENTARY SCHOOL	F	F	79	CORRECT II	B	+ 3 Letter Grades	79	0	CORRECT II	+12	+15	+27	+4	+15	+10
2	DUVAL	NATHAN B. FORREST HIGH SCHOOL	F	F	64	CORRECT II	D	+ 1 Letter Grade	54	-10	CORRECT II	-4	-3	+6	+4	-5	+9
2	DUVAL	WAYMAN ACADEMY OF THE ARTS	F	F	82	CORRECT II	C	+ 2 Letter Grades	90	+8	CORRECT I	-16	+6	+37	+46	0	+3
2	DUVAL	WILLIAM M. RAINES HIGH SCHOOL	F	F	67	CORRECT II	F	No Change	72	+5	INTERVENE	+2	+4	-2	-7	+5	+5
2	PUTNAM	WILLIAM D. MOSELEY ELEMENTARY SCHOOL	F	F	72	CORRECT II	A	+ 4 Letter Grades	100	+28	N/A	+18	+8	+4	+7	+20	+28
3	ORANGE	MOLLIE E RAY ELEMENTARY SCHOOL	INTERVENE	F	69	INTERVENE	A	+ 4 Letter Grades	100	+31	CORRECT I	+23	+30	+29	+12	+16	+14

REGION	DISTRICT	SCHOOL	TARGETED STATUS	2008 School Grade	2008 AYP Criteria Met	2008 DA Category	2009 School Grade	Change in School Grade	2009 AYP Criteria Met	Change in AYP % Points	2009 DA Category	Reading +/- meeting high standards	Math +/- meeting high standards	Writing +/- meeting high standards	Science +/- meeting high standards	Reading +/- making learning gains	Math +/- making learning gains
3	ORANGE	EXCEL- MIDDLE SCHOOL PROFESSIONAL ACADEMY	F	F	79	CORRECT II	F	No Change	79	0	CORRECT II	-7	-5	-4	0	-2	-18
3	ST. LUCIE	GARDEN CITY ELEMENTARY SCHOOL	F	F	74	CORRECT II	Closed	-	-	-	-	-	-	-	-	-	
4	HILLSBOROUGH	FRANKLIN MIDDLE MAGNET SCHOOL	INTERVENE	D	72	INTERVENE	C	+ 1 Letter Grade	74	+2	INTERVENE	-1	+5	+6	-7	+4	+2
4	HILLSBOROUGH	MIDDLETON HIGH SCHOOL	INTERVENE	D	69	INTERVENE	D	No Change	64	-5	INTERVENE	-1	-1	-2	-4	+2	+3
4	HILLSBOROUGH	SULPHUR SPRINGS ELEMENTARY SCHOOL	INTERVENE	F	69	INTERVENE	B	+ 3 Letter Grades	100	+31	CORRECT I	+13	+23	+20	+27	+17	+23
4	HILLSBOROUGH	BROWARD ELEMENTARY SCHOOL	F	F	69	CORRECT II	C	+ 2 Letter Grades	82	+13	CORRECT I	+1	+2	+35	-13	+11	+18
4	COLLIER	GOLDEN GATE HIGH SCHOOL	F	F	62	CORRECT II	C	+ 2 Letter Grades	85	+23	CORRECT I	+8	+13	+8	-8	+8	+8
4	COLLIER	IMMOKALEE COMMUNITY SCHOOL	F	F	82	CORRECT II	C	+ 2 Letter Grades	85	+3	CORRECT I	-9	+4	+63	+2	+2	+4
4	COLLIER	IMMOKALEE HIGH SCHOOL	F	F	64	CORRECT II	D	+ 1 Letter Grade	69	+5	CORRECT II	+2	+4	-2	-4	-2	+1
5	BROWARD	LARKDALE ELEMENTARY SCHOOL	INTERVENE	D	74	INTERVENE	C	+ 1 Letter Grade	92	+18	INTERVENE	+8	+13	+31	-5	0	+18
5	DADE	HOLMES ELEMENTARY SCHOOL	INTERVENE	F	77	INTERVENE	C	+ 2 Letter Grades	82	+5	INTERVENE	+10	+13	-22	-5	+21	+32
5	DADE	LIBERTY CITY ELEMENTARY SCHOOL	INTERVENE	F	79	INTERVENE	A	+ 4 Letter Grades	100	+21	CORRECT I	+17	+22	+14	-14	+19	+48
5	DADE	MIAMI CENTRAL SENIOR HIGH SCHOOL	INTERVENE	F	54	INTERVENE	D	+ 1 Letter Grade	85	+31	INTERVENE	+4	+13	+10	+7	+1	+5
5	DADE	MIAMI EDISON SENIOR HIGH SCHOOL	INTERVENE	F	77	INTERVENE	F	No Change	74	-3	INTERVENE	-2	-3	-21	+2	+10	-7
5	PALM BEACH	JOHN F. KENNEDY MIDDLE SCHOOL	INTERVENE	D	77	INTERVENE	C	+ 1 Letter Grade	90	+13	CORRECT I	+7	+10	+1	0	+14	+7

REGION	DISTRICT	SCHOOL	TARGETED STATUS	2008 School Grade	2008 AYP Criteria Met	2008 DA Category	2009 School Grade	Change in School Grade	2009 AYP Criteria Met	Change in AYP % Points	2009 DA Category	Reading +/- meeting high standards	Math +/- meeting high standards	Writing +/- meeting high standards	Science +/- meeting high standards	Reading +/- making learning gains	Math +/- making learning gains
5	BROWARD	COCONUT CREEK HIGH SCHOOL	F	F	62	CORRECT II	D	+ 1 Letter Grade	64	+2	CORRECT II	-4	-1	+13	-8	+1	-2
5	BROWARD	IMAGINE CHARTER/N LAUDERDALE	F	F	82	CORRECT II	D	+ 1 Letter Grade	85	+3	CORRECT II	+5	-4	-6	-12	+21	-4
5	BROWARD	SUNLAND PARK ELEMENTARY SCHOOL	F	F	79	CORRECT II	F	No Change	82	+3	CORRECT II	-3	+4	+2	-7	-5	-1
5	BROWARD	SUSIE DANIELS CHARTER SCHOOL	F	F	79	PREVENT II	F	No Change	82	+3	CORRECT II	-2	-11	+3	+4	+17	-16
5	DADE	HOMESTEAD SENIOR HIGH SCHOOL	F	F	62	CORRECT II	D	+ 1 Letter Grade	56	-6	CORRECT II	+4	+7	+2	+4	-1	+1
5	DADE	MIAMI CAROL CITY SENIOR HIGH	F	F	59	CORRECT II	D	+ 1 Letter Grade	79	+20	CORRECT II	0	+11	+11	+4	0	+5
5	DADE	MIAMI COMMUNITY CHARTER SCHOOL	F	F	74	PREVENT II	A	+ 4 Letter Grades	100	+26	PREVENT I	+23	+34	+11	-9	+28	+35
5	DADE	MIAMI NORLAND SENIOR HIGH SCHOOL	F	F	74	CORRECT II	D	+ 1 Letter Grade	74	0	CORRECT II	+4	+8	-7	+3	+3	+6
5	DADE	NORTH MIAMI SENIOR HIGH SCHOOL	F	F	62	CORRECT II	D	+ 1 Letter Grade	69	+7	CORRECT II	+4	+11	-3	-1	+6	+11
5	PALM BEACH	GLADES CENTRAL HIGH SCHOOL	F	F	67	CORRECT II	D	+ 1 Letter Grade	79	+12	CORRECT II	+4	+9	-4	0	+1	-1

E2-2: Decision Tree for Selection of Intervention Model for Persistently Lowest-Achieving Schools



Other Factors to Consider:
Level of District Support - If the di
instructional support, will improvem
after support is no longer provided?

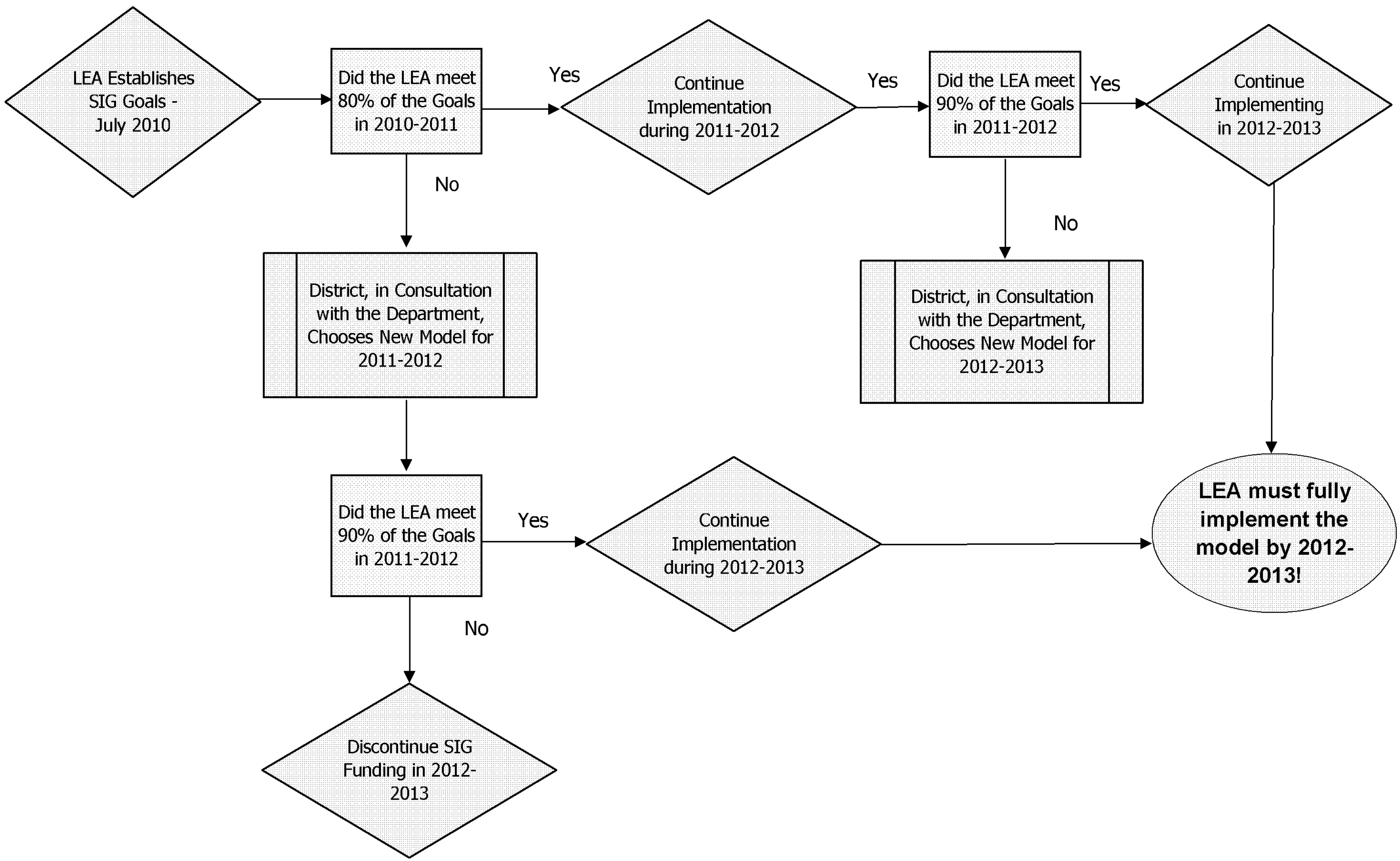
Supply of Qualified Staff - If the di
highly effective staff and has previo
and retain staff, will the turnaround

Level of Improved Achievement -
student achievement in the last two
in the last school year?

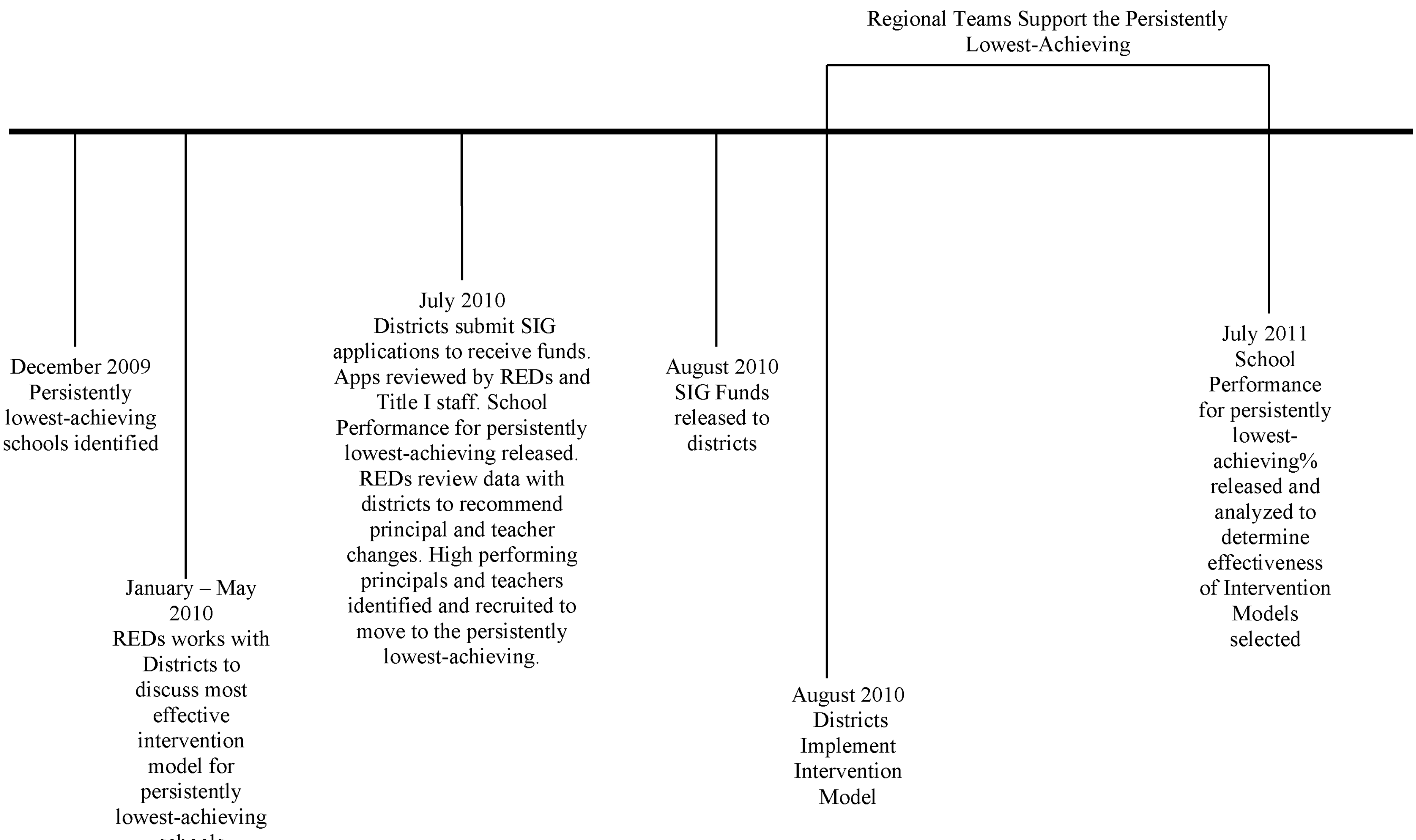
*"Improved Achievement" means improved school grade, increased percentage of AYP criteria met, or increased proficiency rates of the "total" AYP subgroup.

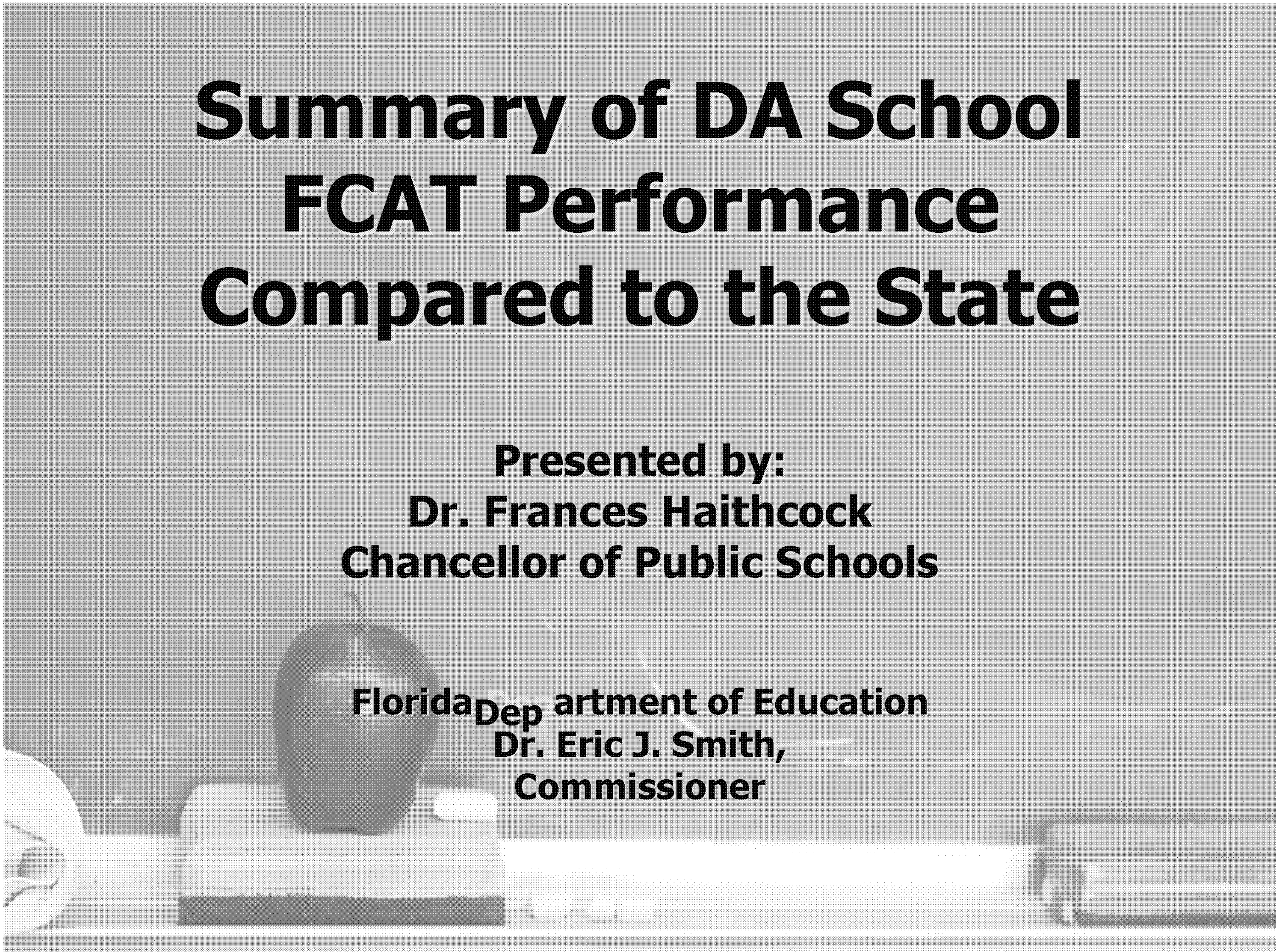
E2-3: Performance Expectations for Intervention Model

LEAs and schools will create annual goals for the following areas: school grade; overall AYP criteria met; proficiency rates for all students in reading, mathematics, science, and writing; learning gains in reading and mathematics; graduation rates; dropout rates; minutes via extending the learning day; student attendance rates; enrollment in advanced coursework, dual enrollment, and obtainment of industry certification;, college enrollment rates; discipline referrals; suspensions; truancy rates; and teacher attendance.



Persistently Lowest-Achieving Schools Timeline

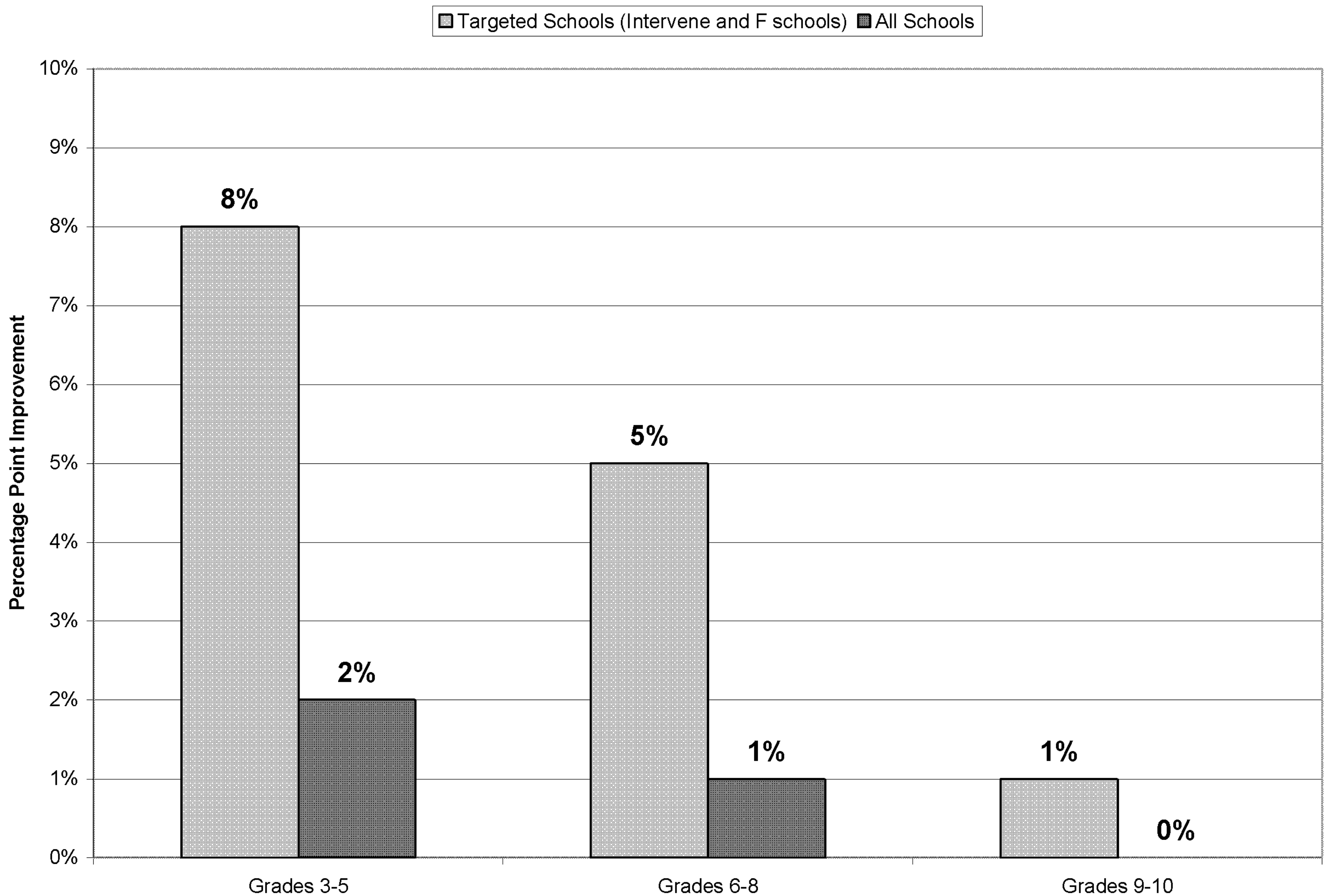



Summary of DA School
FCAT Performance
Compared to the State
Presented by:
Dr. Frances Haithcock
Chancellor of Public Schools
Florida Dep artment of Education
Dr. Eric J. Smith,
Commissioner

DA Schools Academic Growth

- DA schools showed more improvements than the state
- Schools that received direct support, Intervene & F Schools, showed even more growth

Growth from 2008 to 2009 of Students Scoring 3 + on FCAT Reading



Growth from 2008 to 2009 of Students Scoring 3 + on FCAT Reading

Grades 3-5

- 72% of Intervene and F Schools Showed Growth

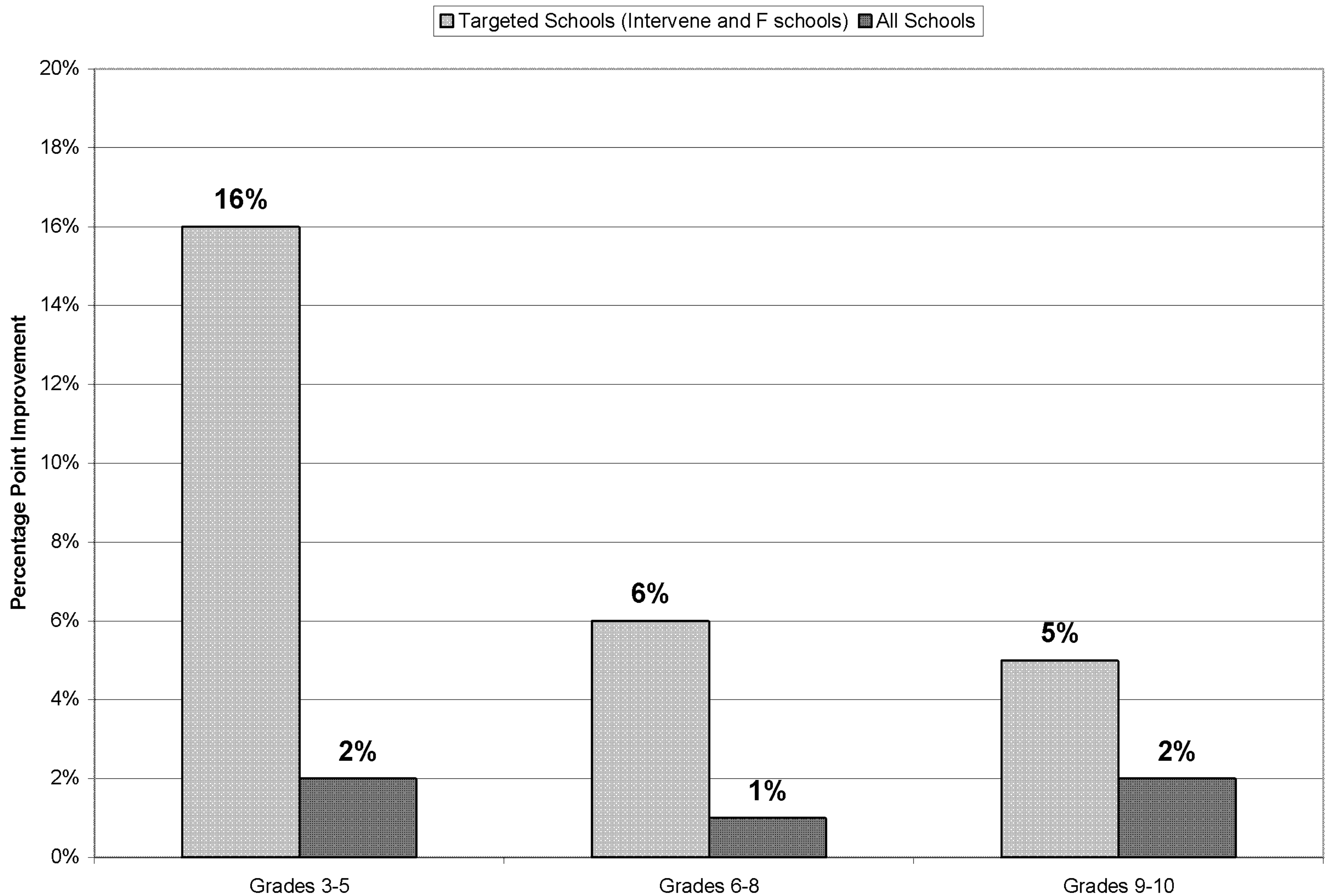
Grades 6-8

- 71% of Intervene and F Schools Showed Growth

Grades 9-10

- 56% of Intervene and F Schools Showed Growth

Growth from 2008 to 2009 of Students Scoring 3 + on FCAT Mathematics



Growth from 2008 to 2009 of Students Scoring 3 + on FCAT Mathematics

Grades 3-5

- 83% of Intervene and F Schools Showed Growth

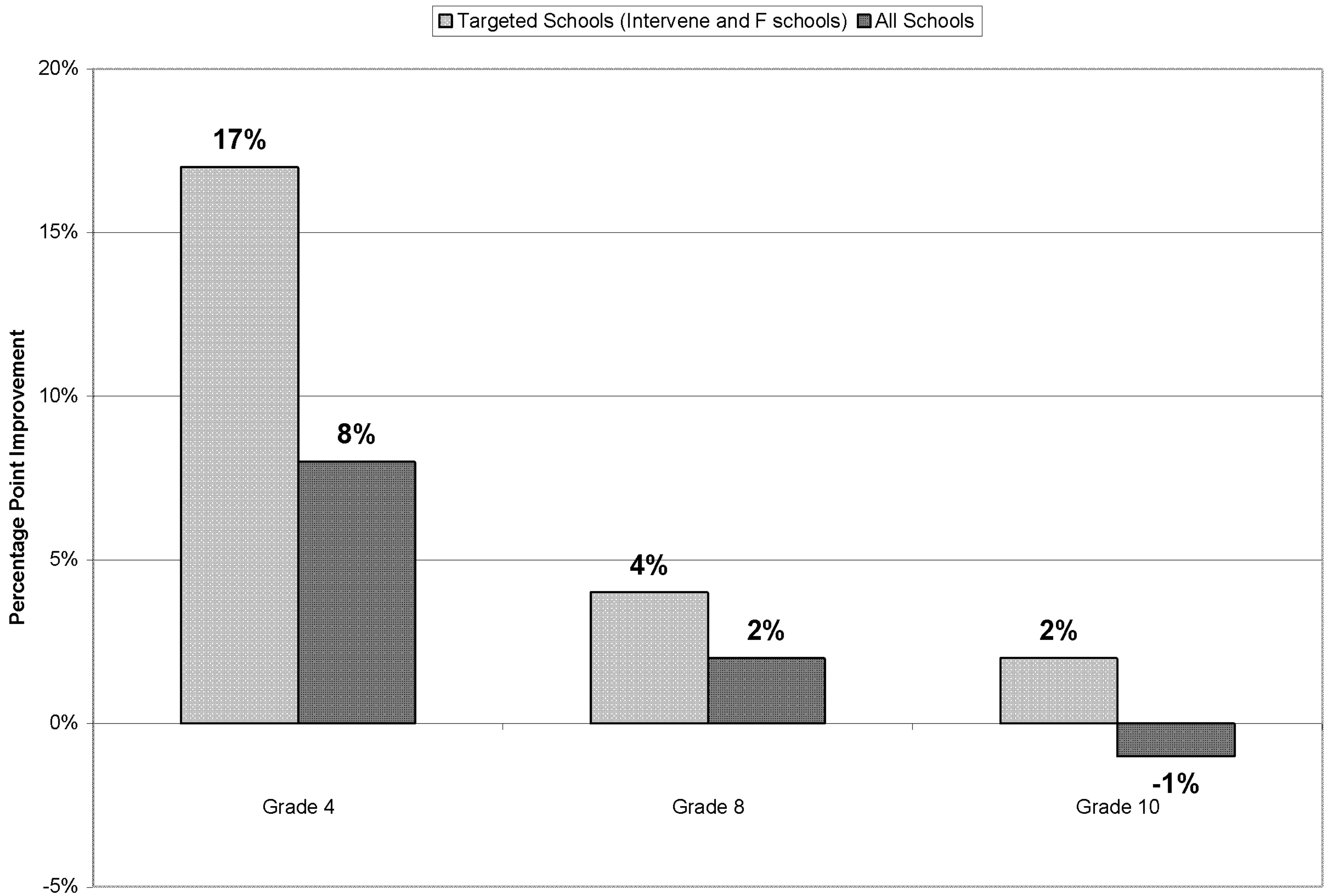
Grades 6-8

- 86% of Intervene and F Schools Showed Growth

Grades 9-10

- 69% of Intervene and F Schools Showed Growth

Growth from 2008 to 2009 of Students Scoring 3.5 + on FCAT Writing



Growth from 2008 to 2009 of Students Scoring 3.5 + on FCAT Writing

Grade 4

- 83% of Intervene and F Schools Showed Growth

Grade 8

- 100% of Intervene and F Schools Showed Growth

Grade 10

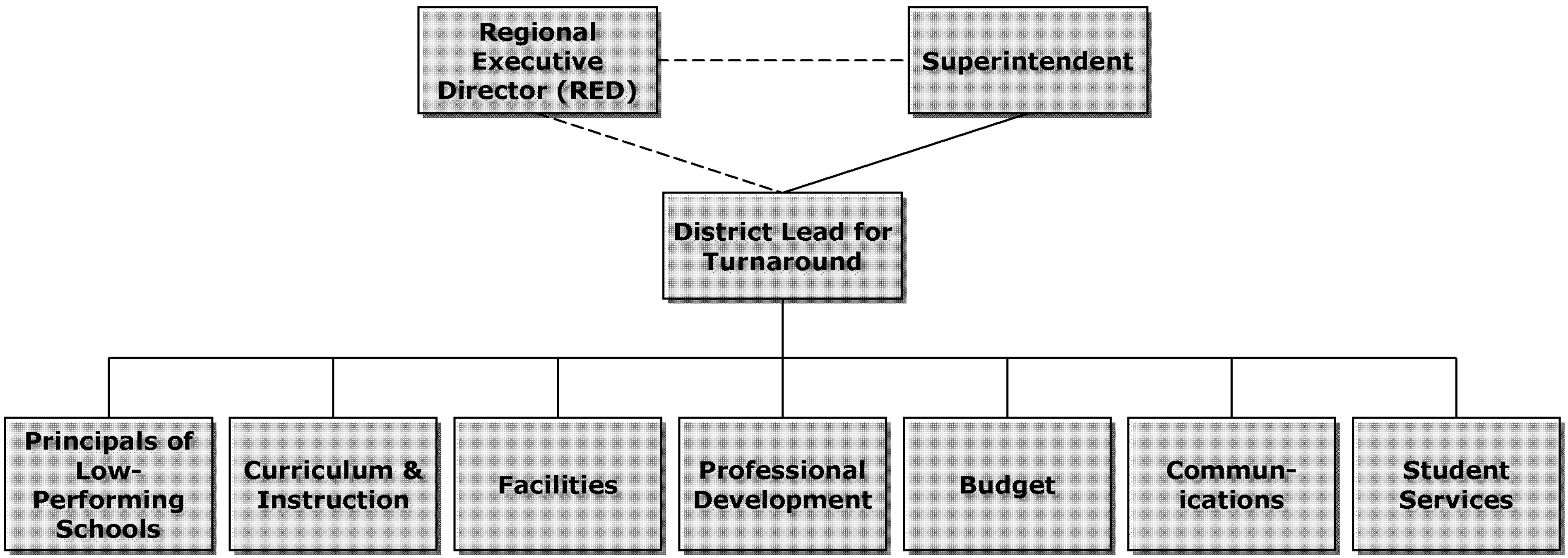
- 38% of Intervene and F Schools Showed Growth

DA Schools' Grades and AYP Status

- **79% of Intervene & F Schools Improved total AYP %**
- **79% of Intervene & F Schools Improved School Grade by 1 or more letter grades**
- **38% of Intervene & F Schools Improved School Grade by 2 or more letter grades**
- **6 Elementary Schools increased from "F" to "A" <u>and</u> made 100% AYP**
- **Dade – Liberty City Elementary School**
- **Dade – Miami Community Charter School**
- **Escambia – George S. Hallmark Elementary School**
- **Escambia – Navy Point Elementary School**
- **Orange – Mollie E. Ray Elementary School**
- **Putnam – William D. Mosley Elementary School**

E2-6: District Turnaround for Persistently Lowest-Achieving Schools

Organizational Chart



E2-7: Intervene and Correct II F High Schools to receive CTE Expansion RTTT Funds

Region	District Name	School Number	School Name	2009 School Grade	2009 AYP Criteria Met	2009 DA Category	2009 Targeted Status
1	JEFFERSON	0021	JEFFERSON COUNTY MIDDLE/HIGH SCHOOL	F	72	INTERVENE	Intervene
2	DUVAL	0351	ANDREW JACKSON HIGH SCHOOL	F	59	INTERVENE	Intervene
2	DUVAL	0961	JEAN RIBAULT HIGH SCHOOL	F	69	INTERVENE	Intervene
2	DUVAL	1651	WILLIAM M. RAINES HIGH SCHOOL	F	72	INTERVENE	Intervene
4	HILLSBOROUGH	3004	MIDDLETON HIGH SCHOOL	D	64	INTERVENE	Implement Intervene
5	DADE	7301	MIAMI EDISON SENIOR HIGH SCHOOL	F	74	INTERVENE	Implement Intervene
5	DADE	7251	MIAMI CENTRAL SENIOR HIGH SCHOOL	D	85	INTERVENE	Transitional Intervene
5	PALM BEACH	0691	LAKE WORTH HIGH SCHOOL	D	64	INTERVENE	Intervene
1	GADSDEN	0071	EAST GADSDEN HIGH SCHOOL	F	79	CORRECT II	F
1	GADSDEN	0051	WEST GADSDEN HIGH SCHOOL	F	85	CORRECT II	F
1	LEON	0161	AMOS P. GODBY HIGH SCHOOL	F	77	CORRECT II	F
1	MADISON	0011	MADISON COUNTY HIGH SCHOOL	F	72	CORRECT II	F
2	DUVAL	2851	A. PHILIP RANDOLPH ACADEMIES	F	64	CORRECT II	F
2	DUVAL	2651	FIRST COAST HIGH SCHOOL	F	46	CORRECT II	F
2	HAMILTON	0032	HAMILTON COUNTY HIGH SCHOOL	F	67	CORRECT II	F
2	LEVY	0091	WILLISTON HIGH SCHOOL	F	69	CORRECT II	F
2	ST. JOHNS	0033	ST. JOHNS TECHNICAL HIGH SCHOOL	F	72	CORRECT II	F
3	OSCEOLA	0841	POINCIANA HIGH SCHOOL	F	59	CORRECT II	F
4	HENDRY	0201	CLEWISTON HIGH SCHOOL	F	67	CORRECT II	F
4	PINELLAS	1531	GIBBS HIGH SCHOOL	F	69	CORRECT II	F
5	DADE	7791	BOOKER T. WASHINGTON SENIOR HIGH	F	69	CORRECT II	F
5	DADE	7341	MIAMI JACKSON SENIOR HIGH SCHOOL	F	67	CORRECT II	F
5	DADE	7411	MIAMI NORTHWESTERN SENIOR HIGH	F	74	CORRECT II	F
5	DADE	7731	MIAMI SOUTHRIDGE SENIOR HIGH	F	64	CORRECT II	F

Florida Department of Education

E2-8: Model Full Day Prekindergarten Programs

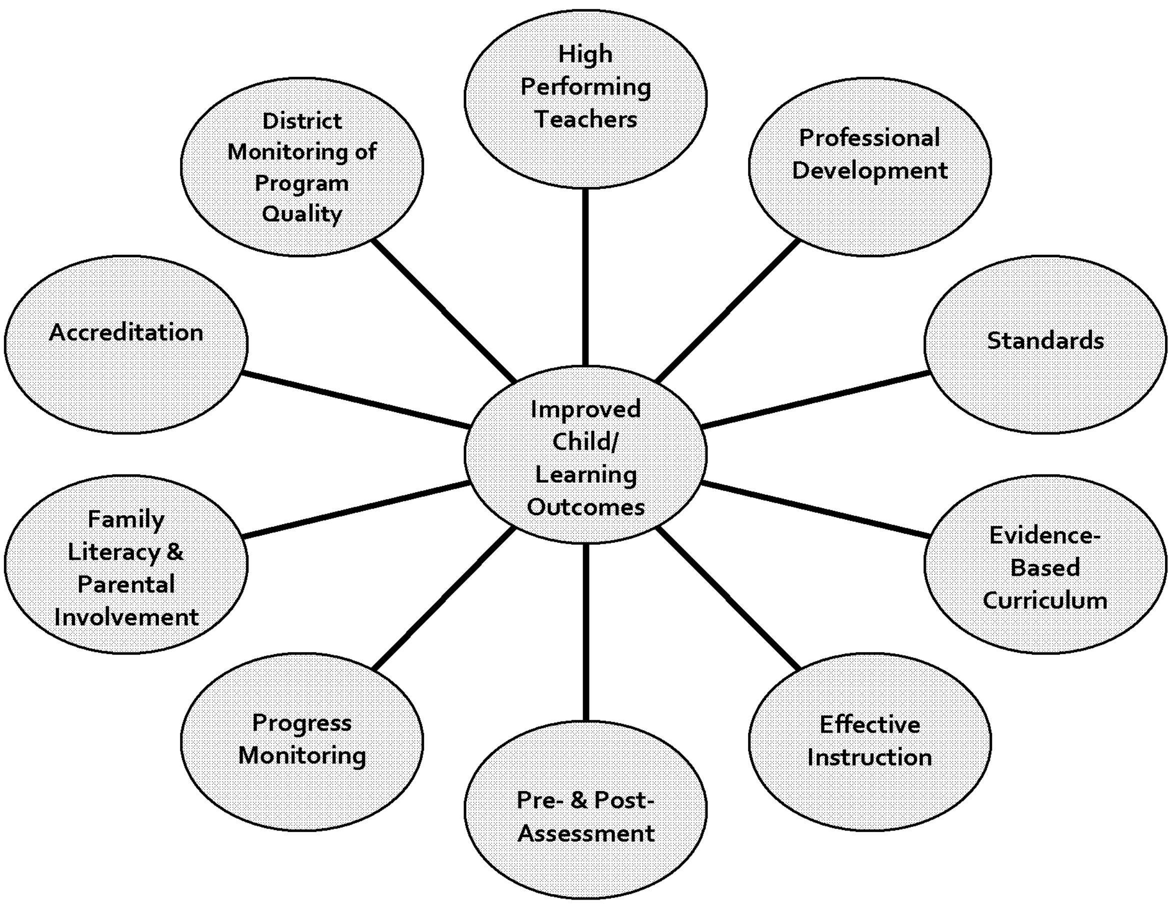
Background Information

Through the work that began in 1999 with the implementation of key statewide initiatives that focused on early, high quality instruction and intervention, Florida has made substantial progress in meeting its goal that all children should be performing at or above grade level in reading and mathematics by the end of third grade on Florida's Comprehensive Achievement Test (FCAT). However, for Florida to meet its goal of 100% proficiency in reading and mathematics by the end of third grade, it must be acknowledged that for some children, an achievement gap exists upon their entry to school. Therefore, Florida must strengthen its foundational programs in reading and mathematics beginning with prekindergarten.

Goal

To provide four-year-olds who are at risk of future school failure with high-quality full-day prekindergarten programs

Components of a Model Prekindergarten Program



High Performing Teachers

High performing teachers must be able to:

- recognize and deliver developmentally appropriate effective instruction
- develop partnerships with families
- use data to inform instruction.

Professional Development

Teachers must participate in appropriate professional development that includes the following areas:

- VPK Education Standards training
- Emergent Literacy for VPK Instructors
- strategies to maximize instructional time through effective classroom management
- support the implementation of the selected curriculum with fidelity
- use of selected assessments and the data.

Standards

The VPK Education Standards are to be used as the basis for instruction. Curriculum, instruction and any assessments must be aligned with these standards.

Evidenced-Based Curriculum

The curriculum used must:

- have primary or secondary research that supports its effectiveness (primary research are studies to support the use of the specific curriculum in reading and/or math; secondary research is empirical research that supports the use of specific instructional practices that are included in the curriculum)
- be aligned with the VPK Standards and with the district's elementary reading and math curricula
- be developmentally appropriate
- include supplemental materials designed to meet the targeted needs of the children.

Pre- & Post- Assessment

Pre-and post-assessment results must:

- be aligned with the VPK Education Standards
- provide information on targeted entry and exit skills during the prekindergarten program.

On-going Progress Monitoring

On-going progress monitoring measures must:

- be aligned with the VPK Education Standards
- be administered multiple times throughout the program
- provide data to inform instructional focus and strategies for use by the classroom teacher.

Family Literacy and Parental Involvement

Parent involvement must be:

- designed to help parents reinforce classroom instruction
- regularly scheduled at times convenient for parents.

Improved Student Outcomes
Implementation the above components should result in improved child outcomes, such as:

- high performance on post-assessments
- high performance on kindergarten screening
- continue to accelerate rate of learning or learning gains (e.g., results of progress monitoring measures)
- increased academic engagement.

District Monitoring of Program Quality
Districts must develop a system to periodically review/observe classrooms to ensure that the core components of the model program are in place (e.g., principal walk-through, peer-to-peer monitoring).

Accreditation
Programs should aspire to become accredited by either a state or nationally recognized accrediting association (e.g., Southern Associate of Colleges and Schools (SACS), National Association for the Education of Young Children guidelines, National Early Childhood Program Accreditation Commission).

E2-9: Section (E) Initiative Summary Chart

Federal Requirement	Initiative Outcome	Implementation Timeline	Year 1 Budget	Year 2 Budget	Year 3 Budget	Year 4 Budget	Total Budget
(E)(2)(ii) – Support LEAs in turning around schools	• State-Led: Extend Support to all Schools on the Persistently Lowest-Achieving list.	• Year 1: Districts/schools will select and implement intervention model and receive SIG funds to fund implementation. DA Regional Teams will assist in implementation and monitor progress. At the end of the school year, school performance will be analyzed to determine effectiveness of implemented option. • Year 2: Continue implementation of model if effective. At the end of the school year, school performance will be analyzed to determine effectiveness of option. • Year 3: Continue implementation of model if effective. At the end of the school year, school performance will be analyzed to determine effectiveness of option. • Year 4: Continue implementation of model if effective. At the end of the school year, school performance will be analyzed to determine effectiveness of option.	N/A	N/A	N/A	N/A	Regional Teams already in place. No additional cost required for this initiative.
(E)(2)(ii) – Support LEAs in turning around schools	• State-Led: Teacher Recruitment • Expand the recruitment and placement of promising teachers within the state's two districts (Miami-Dade and Duval) with the greatest number of schools on the persistently lowest-achieving list through an external partnership.	• Year 1: FDOE to release RFP. Partner selected. Planning year. Teachers recruited and trained. • Year 2: School placement is determined. Teachers report to assigned school. • Year 3: Teacher effectiveness data to be tracked to determine success of organization. • Year 4: Teacher effectiveness data to be tracked to determine success of organization. Research completed to capture best practices.	N/A: Planning	$3,000,000	$3,000,000	$3,000,000	$9,000,000
(E)(2)(ii) – Support LEAs in turning around schools	• State-Led: Leadership Pipeline for Turnaround Principals and Assistant Principals • Develop a statewide pool of aspiring principals and assistant principals who have the knowledge and leadership skills to be effective in turning around struggling schools. Placement of these administrators will be in Florida's persistently lowest-achieving schools and feeder patterns.	• Year 1: FDOE to release RFP. Partner selected. Planning year. Candidates selected for training. • Year 2: Candidates begin training modules.	N/A: Planning	$2,000,000	$2,000,000	$2,000,000	$6,000,000

Federal Requirement	Initiative Outcome	Implementation Timeline	Year 1 Budget	Year 2 Budget	Year 3 Budget	Year 4 Budget	Total Budget
		• Year 3: Candidates continue participation in training modules. • Year 4: Candidates begin internship component of training module. Placed in persistently lowest-achieving schools and their feeder patterns. Research completed to capture best practices.					
(E)(2)(ii) – Support LEAs in turning around schools	• State-Led: Building District-Level Capacity for Turnaround in Rural Districts • Build district-level capacity, particularly in small, rural school districts to project manage, analyze data, strategically plan, and conduct school reform to improve student achievement in persistently lowest-achieving schools.	• Year 1: FDOE to release RFP. Partner selected. FDOE will invite selected districts to participate. Planning year. • Year 2: Districts begin modules. • Year 3: Districts complete training modules. Research completed to capture best practices. • Year 4: N/A	N/A: Planning	$750,000	$750,000	Project Completed	$1,500,000
(E)(2)(ii) – Support LEAs in turning around schools	• State-Led: Differentiated Accountability Summer Academy • Improve the quality of instruction by providing systematic and intensive professional development during a summer DA academy that focuses on instructional leadership and teacher effectiveness and topics that are consistently identified as concerns in the state's persistently lowest-achieving schools and their feeder patterns.	• Year 1: DA Regional Teams to identify location of training and select participants. Training conducted. Regional Teams provide support throughout the school year. • Year 2: DA Regional Teams to identify location of training and select participants. Training conducted. Regional Teams provide support throughout the school year. • Year 3: DA Regional Teams to identify location of training and select participants. Training conducted. Regional Teams provide support throughout the school year. • Year 4: DA Regional Teams to identify location of training and select participants. Training conducted. Regional Teams provide support throughout the school year.	$2,000,000	$2,000,000	$2,000,000	$2,000,000	$8,000,000

Federal Requirement	Initiative Outcome	Implementation Timeline	Year 1 Budget	Year 2 Budget	Year 3 Budget	Year 4 Budget	Total Budget
(E)(2)(ii) – Support LEAs in turning around schools	• State-Led: Charter School Partnership • Partner with national charter school funding organization(s) to increase the number of charter school options serving high-need neighborhoods by opening 30–40 new high quality charter schools in those neighborhoods, with 25-30 of those schools opening within the feeder patterns of the persistently lowest-achieving schools.	• Year 1: Identify and recruit most-effective charter operators to establish schools in feeder patterns of the persistently lowest-achieving schools. • Year 2: Continue expansion of charter schools in feeder patterns of the persistently lowest-achieving schools. • Year 3: Continue expansion of charter schools in feeder patterns of the persistently lowest-achieving schools. • Year 4: Continue expansion of charter schools in feeder patterns of the persistently lowest-achieving schools.	$1,000,000	$4,000,000	$8,000,000	$7,000,000	$20,000,000
(E)(2)(ii) – Support LEAs in turning around schools	• State-Led: Improve and Expand STEM Career and Professional Academies • FDOE to provide funds to expand high quality Career and Technical Education programs (namely STEM) as well as the expansion and/or establishment of Career and CAPE Academies to assist in the preparation of students for college and the workforce by linking academic skills to career training. Funding will be provided to the twenty-four lowest-performing high schools on the persistently lowest-achieving list.	• Year 1: FDOE, in partnership with districts/schools, will review current CTE programs in the 24 persistently lowest-achieving high schools and determine how to expand offerings to include STEM programs. Curriculum, equipment, and appropriate staff to be selected. Staff to be trained. • Year 2: Districts/schools implement new CTE program. Data to be tracked to monitor success of program. • Year 3: Districts/schools implement new CTE program. Data to be tracked to monitor success of program. • Year 4: Districts/schools implement new CTE program. Data to be tracked to monitor success of program.	$5,198,600	$2,969,300	$1,111,550	$720,550	$10,000,000

Federal Requirement	Initiative Outcome	Implementation Timeline	Year 1 Budget	Year 2 Budget	Year 3 Budget	Year 4 Budget	Total Budget
(E)(2)(ii) – Support LEAs in turning around schools	• State-Led: Reading Coordinators • Provide 40 reading coordinators to distribute to Regional Teams to ensure ongoing support and coaching of school and district staff to improve the quality of reading instruction in schools on the persistently lowest-achieving list and their feeder patterns.	• Year 1: DA Regional Executive Director will recruit, hire, and place coordinators in selected schools within the persistently lowest-achieving and their feeder patterns. Data to be tracked to ensure effectiveness of coordinator after placement. • Year 2: Coordinators continue serving persistently lowest-achieving schools and their feeder patterns. Data to be tracked to ensure effectiveness of coordinator after placement. • Year 3: Coordinators continue serving persistently lowest-achieving schools and their feeder patterns. Data to be tracked to ensure effectiveness of coordinator after placement. • Year 4: Coordinators continue serving persistently lowest-achieving schools and their feeder patterns. Data to be tracked to ensure effectiveness of coordinator after placement.	$3,125,000	$3,125,000	$3,125,000	$3,125,000	$12,500,000
(E)(2)(ii) – Support LEAs in turning around schools	• State-Led: Science, Technology, Engineering, and Mathematics (STEM) Coordinators • Provide 20 STEM coordinators to distribute to Regional Teams to ensure ongoing support and coaching of school and district staff to strengthen STEM initiatives within schools on the persistently lowest-achieving list and their feeder patterns.	• Year 1: DA Regional Executive Director will recruit, hire, and place coordinators in selected schools within the persistently lowest-achieving and their feeder patterns. Data to be tracked to ensure effectiveness of coordinator after placement. • Year 2: Coordinators continue serving persistently lowest-achieving schools and their feeder patterns. Data to be tracked to ensure effectiveness of coordinator after placement. • Year 3: Coordinators continue serving persistently lowest-achieving schools and their feeder patterns. Data to be tracked to ensure effectiveness of coordinator after placement. • Year 4: Coordinators continue serving persistently lowest-achieving schools and their feeder patterns. Data to be tracked to ensure effectiveness of coordinator after placement.	$1,750,000	$1,750,000	$1,750,000	$1,750,000	$7,000,000

Federal Requirement	Initiative Outcome	Implementation Timeline	Year 1 Budget	Year 2 Budget	Year 3 Budget	Year 4 Budget	Total Budget
(E)(2)(ii) – Support LEAs in turning around schools	• State-Led: Community Compact • Provide a competitive process for districts with a high school on the persistently lowest-achieving list to enter into a compact with communities and local businesses to provide parents with family literacy programs and a parent academy along with mentors, tutors, and volunteers for at-risk students.	• Year 1: FDOE to select one district to implement RFP with CBO. FDOE monitors implementation of compact. • Year 2: District and CBO implement activities of compact. Data tracked to ensure compact goals are reached. FDOE monitors implementation of the compact. • Year 3: District and CBO implement activities of compact. Data tracked to ensure compact goals are reached. FDOE monitors implementation of the compact. • Year 4: District and CBO implement activities of compact. Data tracked to ensure compact goals are reached. FDOE monitors implementation of the compact. Research completed to capture best practices of the initiative.	$3,000,000	$3,000,000	$3,000,000	$3,000,000	$12,000,000
(E)(2)(ii) – Support LEAs in turning around schools	• District-Led: Extended learning time in Intervene Schools • Increase instructional time for students below grade level in the state's lowest-performing high schools (Intervene) that are also on the state's persistently lowest-achieving list. • 300 hours of instructional time is added to the school year.	• Year 1: Districts/schools will identify curriculum to be used during extended day/year and select most effective teachers to deliver instruction. All teachers trained in curriculum and lesson study process. • Year 2: Districts/schools to implement extended day/year. Continuously review formative and interim assessment data to redirect instruction and intervention. • Year 3: Districts/schools to implement extended day/year. Continuously review formative and interim assessment data to redirect instruction and intervention. • Year 4: Districts/schools to implement extended day/year. Continuously review formative and interim assessment data to redirect instruction and intervention.	Estimated cost 1K per student. Cost depends on curriculum selected and size of student population.				

Federal Requirement	Initiative Outcome	Implementation Timeline	Year 1 Budget	Year 2 Budget	Year 3 Budget	Year 4 Budget	Total Budget
(E)(2)(ii) – Support LEAs in turning around schools	• District-Led: Expand Full-day Prekindergarten • Provide four-year-olds who are at risk for future school failure with high-quality full-day prekindergarten programs within the feeder patterns of high schools on the persistently lowest-achieving list.	• Year 1: Districts/schools will review current placemen of Pre-K programs and identify elementary schools to introduce new programs. Curriculum and staff to be selected and training provided on implementation. • Year 2: Districts/schools implement new Pre-K program. Data to be tracked to determine increase of school readiness skills of participating students. • Year 3: Districts/schools implement new Pre-K program. Data to be tracked to determine increase of school readiness skills of participating students. • Year 4: Districts/schools implement new Pre-K program. Data to be tracked to determine increase of school readiness skills of participating students.	Costs are dependent on how districts use RTTT, SIG, and Title I (A) funding and the extent of implementation.				
(E)(2)(ii) – Support LEAs in turning around schools	• District-Led: Expand career and professional academies • Expand high quality Career and Technical Education programs (namely STEM) as well as the expansion and/or establishment of Career and CAPE academies to assist in the preparation of students for college and the workforce by linking academic skills to career training. A special emphasis will be placed on schools on the persistently lowest-achieving list.	• Year 1: Districts/schools will review current CTE programs in high schools within the persistently lowest-achieving and determine how to expand offerings to include STEM programs. Curriculum, equipment, and appropriate staff to be selected. Staff to be trained. • Year 2: Districts/schools implement new CTE program. Data to be tracked to monitor success of program. • Year 3: Districts/schools implement new CTE program. Data to be tracked to monitor success of program. • Year 4: Districts/schools implement new CTE program. Data to be tracked to monitor success of program.	Costs are dependent on how districts use RTTT, SIG, and Title I (A) funding and the extent of implementation.				

Federal Requirement	Initiative Outcome	Implementation Timeline	Year 1 Budget	Year 2 Budget	Year 3 Budget	Year 4 Budget	Total Budget
(E)(2)(ii) – Support LEAs in turning around schools	• District-Led: Evidence-based and Proven Programs to Support At-Risk Students • Support the initial, continued, and expanded implementation of programs and strategies within the persistently lowest-achieving schools and their feeder patterns to support dropout prevention, encourage advanced classes, positive behavior support systems, mentoring, and curriculum that provide high-need students with college and career-ready skills. A focus will be placed on students returning from DJJ facilities.	• Year 1: Districts/schools will review current program offerings and expand or select additional ones. • Year 2: Districts/schools implement or expand additional ones. Data to be tracked to monitor success of programs. • Year 3: Districts/schools implement or expand additional ones. Data to be tracked to monitor success of programs. • Year 4: Districts/schools implement or expand additional ones. Data to be tracked to monitor success of programs.	Costs are dependent on how districts allocate available funds.				
	Total						$86,000,000

Florida Department of Education
F1-1a: 2008-09 State and Local FEFP Funds, Unranked
2008-09 FEFP Fourth Calculation
State and Local Funding Summary By District

District	Total State and Local Funding -1-	Total State Funding -2-	% -3-	Total Local Funding -4-	% -5-
1 Alachua	183,376,848	105,679,763	57.63%	77,697,085	42.37%
2 Baker	33,226,486	28,267,812	85.08%	4,958,674	14.92%
3 Bay	167,642,831	63,434,687	37.84%	104,208,144	62.16%
4 Bradford	23,316,099	18,054,402	77.43%	5,261,697	22.57%
5 Brevard	492,861,236	259,921,109	52.74%	232,940,127	47.26%
6 Broward	1,745,389,260	793,393,440	45.46%	951,995,820	54.54%
7 Calhoun	15,308,355	13,188,659	86.15%	2,119,696	13.85%
8 Charlotte	117,177,959	29,816,469	25.45%	87,361,490	74.55%
9 Citrus	106,793,611	42,018,878	39.35%	64,774,733	60.65%
10 Clay	241,834,293	180,005,368	74.43%	61,828,925	25.57%
11 Collier	322,198,188	80,093,108	24.86%	242,105,080	75.14%
12 Columbia	67,609,784	51,669,364	76.42%	15,940,420	23.58%
13 Miami-Dade	2,336,892,925	918,680,955	39.31%	1,418,211,970	60.69%
14 DeSoto	34,108,857	23,675,195	69.41%	10,433,662	30.59%
15 Dixie	14,344,384	10,856,501	75.68%	3,487,883	24.32%
16 Duval	853,973,353	492,926,294	57.72%	361,047,059	42.28%
17 Escambia	265,278,799	171,068,186	64.49%	94,210,613	35.51%
18 Flagler	85,996,745	23,153,998	26.92%	62,842,747	73.08%
19 Franklin	9,031,765	2,324,035	25.73%	6,707,730	74.27%
20 Gadsden	40,719,843	32,284,337	79.28%	8,435,506	20.72%
21 Gilchrist	19,540,206	15,368,479	78.65%	4,171,727	21.35%
22 Glades	9,902,590	5,942,410	60.01%	3,960,180	39.99%
23 Gulf	14,138,081	3,456,948	24.45%	10,681,133	75.55%
24 Hamilton	13,071,282	8,744,896	66.90%	4,326,386	33.10%
25 Hardee	33,921,265	24,202,625	71.35%	9,718,640	28.65%
26 Hendry	48,737,667	34,990,882	71.79%	13,746,785	28.21%
27 Hernando	149,274,556	86,205,893	57.75%	63,068,663	42.25%
28 Highlands	81,973,754	44,140,830	53.85%	37,832,924	46.15%
29 Hillsborough	1,309,000,928	797,589,839	60.93%	511,411,089	39.07%
30 Holmes	22,295,070	19,765,721	88.66%	2,529,349	11.34%
31 Indian River	118,436,020	31,194,463	26.34%	87,241,557	73.66%
32 Jackson	47,675,059	39,036,220	81.88%	8,638,839	18.12%
33 Jefferson	8,277,455	4,968,611	60.03%	3,308,844	39.97%
34 Lafayette	7,316,959	5,961,748	81.48%	1,355,211	18.52%
35 Lake	262,668,989	138,099,922	52.58%	124,569,067	47.42%
36 Lee	569,045,147	139,629,593	24.54%	429,415,554	75.46%
37 Leon	220,227,158	126,032,825	57.23%	94,194,333	42.77%
38 Levy	42,014,933	28,212,606	67.15%	13,802,327	32.85%
39 Liberty	10,295,330	8,805,435	85.53%	1,489,895	14.47%
40 Madison	18,423,791	14,157,857	76.85%	4,265,934	23.15%
41 Manatee	286,135,231	109,354,297	38.22%	176,780,934	61.78%
42 Marion	276,044,087	154,148,566	55.84%	121,895,521	44.16%
43 Martin	125,228,996	33,295,686	26.59%	91,933,310	73.41%
44 Monroe	63,614,387	14,835,408	23.32%	48,778,979	76.68%
45 Nassau	75,267,833	27,081,162	35.98%	48,186,671	64.02%
46 Okaloosa	193,996,917	90,173,651	46.48%	103,823,266	53.52%
47 Okeechobee	46,665,322	33,518,843	71.83%	13,146,479	28.17%
48 Orange	1,164,763,659	561,095,472	48.17%	603,668,187	51.83%
49 Osceola	341,307,482	192,501,071	56.40%	148,806,411	43.60%
50 Palm Beach	1,191,545,935	310,961,552	26.10%	880,584,383	73.90%
51 Pasco	453,359,737	293,784,193	64.80%	159,575,544	35.20%
52 Pinellas	725,801,361	293,710,115	40.47%	432,091,246	59.53%
53 Polk	618,144,163	412,291,633	66.70%	205,852,530	33.30%
54 Putnam	75,393,275	51,035,814	67.69%	24,357,461	32.31%
55 St. Johns	193,424,777	59,629,337	30.83%	133,795,440	69.17%
56 St. Lucie	261,243,705	130,767,157	50.06%	130,476,548	49.94%
57 Santa Rosa	161,009,632	106,040,309	65.86%	54,969,323	34.14%
58 Sarasota	298,934,830	71,281,564	23.85%	227,653,266	76.15%
59 Seminole	428,947,988	240,557,822	56.08%	188,390,166	43.92%
60 Sumter	49,535,940	13,939,669	28.14%	35,596,271	71.86%
61 Suwannee	36,799,586	26,390,042	71.71%	10,409,544	28.29%
62 Taylor	19,693,689	12,308,905	62.50%	7,384,784	37.50%
63 Union	15,251,258	13,855,060	90.85%	1,396,198	9.15%
64 Volusia	418,967,881	203,458,541	48.56%	215,509,340	51.44%
65 Wakulla	34,597,669	25,550,840	73.85%	9,046,829	26.15%
66 Walton	48,330,902	11,396,215	23.58%	36,934,687	76.42%
67 Washington	23,220,038	17,108,993	73.68%	6,111,045	26.32%
68 Washington Special	3,773,247	3,773,247	100.00%	0	0.00%
69 FAMU Lab School	3,163,915	3,163,915	100.00%	0	0.00%
70 FAU- Palm Beach	4,261,028	4,261,028	100.00%	0	0.00%
71 FAU- St.Lucie	8,942,946	8,942,946	100.00%	0	0.00%
72 FSU- Broward	4,502,019	4,502,019	100.00%	0	0.00%
73 FSU- Leon	10,481,259	10,481,259	100.00%	0	0.00%
74 UF Lab School	7,823,622	7,823,622	100.00%	0	0.00%
75 Florida Virtual Sch.	87219654	87219654	100.00%	0	0.00%
State	17,920,711,831	8,557,259,970	47.75%	9,363,451,861	52.25%

Florida Department of Education
F1-1a: 2008-09 State and Local FEFP Funds, Ranked
2008-09 FEFP Fourth Calculation
State and Local Funding Summary By District Ranked

District	Total State and Local Funding -1-	Total State Funding -2-	% -3-	Total Local Funding -4-	% -5-
44 Monroe	63,614,387	14,835,408	23.32%	48,778,979	76.68%
66 Walton	48,330,902	11,396,215	23.58%	36,934,687	76.42%
58 Sarasota	298,934,830	71,281,564	23.85%	227,653,266	76.15%
23 Gulf	14,138,081	3,456,948	24.45%	10,681,133	75.55%
36 Lee	569,045,147	139,629,593	24.54%	429,415,554	75.46%
11 Collier	322,198,188	80,093,108	24.86%	242,105,080	75.14%
8 Charlotte	117,177,959	29,816,469	25.45%	87,361,490	74.55%
19 Franklin	9,031,765	2,324,035	25.73%	6,707,730	74.27%
50 Palm Beach	1,191,545,935	310,961,552	26.10%	880,584,383	73.90%
31 Indian River	118,436,020	31,194,463	26.34%	87,241,557	73.66%
43 Martin	125,228,996	33,295,686	26.59%	91,933,310	73.41%
18 Flagler	85,996,745	23,153,998	26.92%	62,842,747	73.08%
60 Sumter	49,535,940	13,939,669	28.14%	35,596,271	71.86%
55 St. Johns	193,424,777	59,629,337	30.83%	133,795,440	69.17%
45 Nassau	75,267,833	27,081,162	35.98%	48,186,671	64.02%
3 Bay	167,642,831	63,434,687	37.84%	104,208,144	62.16%
41 Manatee	286,135,231	109,354,297	38.22%	176,780,934	61.78%
13 Miami-Dade	2,336,892,925	918,680,955	39.31%	1,418,211,970	60.69%
9 Citrus	106,793,611	42,018,878	39.35%	64,774,733	60.65%
52 Pinellas	725,801,361	293,710,115	40.47%	432,091,246	59.53%
6 Broward	1,745,389,260	793,393,440	45.46%	951,995,820	54.54%
46 Okaloosa	193,996,917	90,173,651	46.48%	103,823,266	53.52%
48 Orange	1,164,763,659	561,095,472	48.17%	603,668,187	51.83%
64 Volusia	418,967,881	203,458,541	48.56%	215,509,340	51.44%
56 St. Lucie	261,243,705	130,767,157	50.06%	130,476,548	49.94%
35 Lake	262,668,989	138,099,922	52.58%	124,569,067	47.42%
5 Brevard	492,861,236	259,921,109	52.74%	232,940,127	47.26%
28 Highlands	81,973,754	44,140,830	53.85%	37,832,924	46.15%
42 Marion	276,044,087	154,148,566	55.84%	121,895,521	44.16%
59 Seminole	428,947,988	240,557,822	56.08%	188,390,166	43.92%
49 Osceola	341,307,482	192,501,071	56.40%	148,806,411	43.60%
37 Leon	220,227,158	126,032,825	57.23%	94,194,333	42.77%
1 Alachua	183,376,848	105,679,763	57.63%	77,697,085	42.37%
16 Duval	853,973,353	492,926,294	57.72%	361,047,059	42.28%
27 Hernando	149,274,556	86,205,893	57.75%	63,068,663	42.25%
22 Glades	9,902,590	5,942,410	60.01%	3,960,180	39.99%
33 Jefferson	8,277,455	4,968,611	60.03%	3,308,844	39.97%
29 Hillsborough	1,309,000,928	797,589,839	60.93%	511,411,089	39.07%
62 Taylor	19,693,689	12,308,905	62.50%	7,384,784	37.50%
17 Escambia	265,278,799	171,068,186	64.49%	94,210,613	35.51%
51 Pasco	453,359,737	293,784,193	64.80%	159,575,544	35.20%
57 Santa Rosa	161,009,632	106,040,309	65.86%	54,969,323	34.14%
53 Polk	618,144,163	412,291,633	66.70%	205,852,530	33.30%
24 Hamilton	13,071,282	8,744,896	66.90%	4,326,386	33.10%
38 Levy	42,014,933	28,212,606	67.15%	13,802,327	32.85%
54 Putnam	75,393,275	51,035,814	67.69%	24,357,461	32.31%
14 DeSoto	34,108,857	23,675,195	69.41%	10,433,662	30.59%
25 Hardee	33,921,265	24,202,625	71.35%	9,718,640	28.65%
61 Suwannee	36,799,586	26,390,042	71.71%	10,409,544	28.29%
26 Hendry	48,737,667	34,990,882	71.79%	13,746,785	28.21%
47 Okeechobee	46,665,322	33,518,843	71.83%	13,146,479	28.17%
67 Washington	23,220,038	17,108,993	73.68%	6,111,045	26.32%
65 Wakulla	34,597,669	25,550,840	73.85%	9,046,829	26.15%
10 Clay	241,834,293	180,005,368	74.43%	61,828,925	25.57%
15 Dixie	14,344,384	10,856,501	75.68%	3,487,883	24.32%
12 Columbia	67,609,784	51,669,364	76.42%	15,940,420	23.58%
40 Madison	18,423,791	14,157,857	76.85%	4,265,934	23.15%
4 Bradford	23,316,099	18,054,402	77.43%	5,261,697	22.57%
21 Gilchrist	19,540,206	15,368,479	78.65%	4,171,727	21.35%
20 Gadsden	40,719,843	32,284,337	79.28%	8,435,506	20.72%
34 Lafayette	7,316,959	5,961,748	81.48%	1,355,211	18.52%
32 Jackson	47,675,059	39,036,220	81.88%	8,638,839	18.12%
2 Baker	33,226,486	28,267,812	85.08%	4,958,674	14.92%
39 Liberty	10,295,330	8,805,435	85.53%	1,489,895	14.47%
7 Calhoun	15,308,355	13,188,659	86.15%	2,119,696	13.85%
30 Holmes	22,295,070	19,765,721	88.66%	2,529,349	11.34%
63 Union	15,251,258	13,855,060	90.85%	1,396,198	9.15%
68 Washington Special	3,773,247	3,773,247	100.00%	0	0.00%
69 FAMU Lab School	3,163,915	3,163,915	100.00%	0	0.00%
70 FAU- Palm Beach	4,261,028	4,261,028	100.00%	0	0.00%
71 FAU- St.Lucie	8,942,946	8,942,946	100.00%	0	0.00%
72 FSU- Broward	4,502,019	4,502,019	100.00%	0	0.00%
73 FSU- Leon	10,481,259	10,481,259	100.00%	0	0.00%
74 UF Lab School	7,823,622	7,823,622	100.00%	0	0.00%
75 Florida Virtual Sch.	87219654	87219654	100.00%	0	0.00%
State	17,920,711,831	8,557,259,970	47.75%	9,363,451,861	52.25%

Florida Department of Education

F1-1b: 2008-09 State and Local FEFP Funds per student, Unranked

2008-09 FEFP Fourth Calculation

Value of a Mill Per FTE

	District	2008-09 Unweighted FTE -1-	2008 School Taxable Value1 -2-	Value of a Mill -3-	Value of a Mill Per FTE -4-
1	Alachua	27,293.04	13,713,347,543	13,027,680	477
2	Baker	4,942.29	892,096,547	847,492	171
3	Bay	25,232.05	18,991,132,748	18,041,576	715
4	Bradford	3,235.49	942,103,857	894,999	277
5	Brevard	72,200.50	41,482,005,385	39,407,905	546
6	Broward	254,898.34	176,830,926,919	167,989,381	659
7	Calhoun	2,197.33	382,917,219	363,771	166
8	Charlotte	16,993.43	19,947,822,855	18,950,432	1115
9	Citrus	15,796.00	11,717,465,012	11,131,592	705
10	Clay	35,844.38	11,014,229,027	10,463,518	292
11	Collier	41,986.70	80,673,457,620	76,639,785	1825
12	Columbia	9,990.66	2,810,618,069	2,670,087	267
13	Miami-Dade	342,677.77	258,145,375,277	245,238,107	716
14	DeSoto	4,996.94	1,903,101,906	1,807,947	362
15	Dixie	2,061.53	633,774,565	602,086	292
16	Duval	123,730.29	65,401,744,384	62,131,657	502
17	Escambia	40,335.18	16,435,045,831	15,613,294	387
18	Flagler	12,738.31	11,897,528,655	11,302,652	887
19	Franklin	1,201.15	3,504,102,998	3,328,898	2771
20	Gadsden	5,963.10	1,518,898,504	1,442,954	242
21	Gilchrist	2,643.62	731,272,524	694,709	263
22	Glades	1,403.39	726,618,593	690,288	492
23	Gulf	2,006.61	2,629,396,112	2,497,926	1245
24	Hamilton	1,843.68	764,365,634	726,147	394
25	Hardee	5,153.67	1,696,823,206	1,611,982	313
26	Hendry	7,005.46	2,442,657,068	2,320,524	331
27	Hernando	22,636.28	11,452,141,804	10,879,535	481
28	Highlands	12,239.88	6,707,786,873	6,372,398	521
29	Hillsborough	190,104.56	89,319,306,778	84,853,341	446
30	Holmes	3,342.38	452,493,551	429,869	129
31	Indian River	17,398.58	18,329,983,650	17,413,484	1001
32	Jackson	7,076.13	1,553,119,549	1,475,464	209
33	Jefferson	1,103.62	621,186,733	590,127	535
34	Lafayette	1,088.65	250,357,700	237,840	218
35	Lake	40,151.05	22,737,182,842	21,600,324	538
36	Lee	78,310.57	88,318,947,323	83,903,000	1071
37	Leon	32,481.22	16,960,644,677	16,112,612	496
38	Levy	5,972.85	2,424,693,592	2,303,459	386
39	Liberty	1,431.75	259,998,487	246,999	173
40	Madison	2,733.07	742,838,066	705,696	258
41	Manatee	42,095.54	33,099,465,252	31,444,492	747
42	Marion	41,785.51	22,322,733,866	21,206,597	508
43	Martin	17,699.01	21,495,314,575	20,420,549	1154
44	Monroe	7,918.47	26,715,033,370	25,379,282	3205
45	Nassau	11,026.08	8,633,670,144	8,201,987	744
46	Okaloosa	29,050.33	18,410,992,070	17,490,442	602
47	Okeechobee	6,946.94	2,341,126,348	2,224,070	320
48	Orange	170,035.61	112,467,291,492	106,843,927	628
49	Osceola	51,118.06	27,179,997,768	25,820,998	505
50	Palm Beach	169,554.39	168,502,259,637	160,077,147	944
51	Pasco	65,857.96	29,427,865,648	27,956,472	424
52	Pinellas	105,453.24	78,271,018,927	74,357,468	705
53	Polk	93,063.06	36,826,456,936	34,985,134	376
54	Putnam	11,153.94	4,305,530,317	4,090,254	367
55	St. Johns	28,787.48	24,578,936,212	23,349,989	811
56	St. Lucie	38,226.53	23,141,320,030	21,984,254	575
57	Santa Rosa	24,861.06	9,611,701,846	9,131,117	367
58	Sarasota	41,073.22	55,793,950,289	53,004,253	1290
59	Seminole	64,596.25	34,231,907,008	32,520,312	503
60	Sumter	7,381.42	6,400,710,439	6,080,675	824
61	Suwannee	5,861.48	1,802,799,414	1,712,659	292
62	Taylor	2,954.88	1,465,307,511	1,392,042	471
63	Union	2,224.97	249,479,149	237,005	107
64	Volusia	62,886.86	39,735,844,477	37,749,052	600
65	Wakulla	5,201.39	1,593,537,258	1,513,860	291
66	Walton	6,933.41	16,729,181,151	15,892,722	2292
67	Washington	3,495.65	1,085,684,247	1,031,400	295
68	Washington Special	475.68	0	0	0
69	FAMU Lab School	444.23	0	0	0
70	FAU - Palm Beach	619.61	0	0	0
71	FAU - St. Lucie	1,383.11	0	0	0
72	FSU Lab - Broward	646.50	0	0	0
73	FSU Lab - Leon	1,606.31	0	0	0
74	UF Lab School	1,146.77	0	0	0
75	Virtual School	14,000.01	0	0	0
	Total	2,618,006.46	1,814,378,625,064	1,723,659,696	658

Florida Department of Education

F1-1b: 2008-09 State and Local FEFP Funds per student, Ranked

2008-09 FEFP Fourth Calculation

Value of a Mill Per FTE Ranked

	District	2008-09 Unweighted FTE -1-	2008 School Taxable Value1 -2-	Value of a Mill -3-	Value of a Mill Per FTE -4-
44	Monroe	7,918.47	26,715,033,370	25,379,282	3205
19	Franklin	1,201.15	3,504,102,998	3,328,898	2771
66	Walton	6,933.41	16,729,181,151	15,892,722	2292
11	Collier	41,986.70	80,673,457,620	76,639,785	1825
58	Sarasota	41,073.22	55,793,950,289	53,004,253	1290
23	Gulf	2,006.61	2,629,396,112	2,497,926	1245
43	Martin	17,699.01	21,495,314,575	20,420,549	1154
8	Charlotte	16,993.43	19,947,822,855	18,950,432	1115
36	Lee	78,310.57	88,318,947,323	83,903,000	1071
31	Indian River	17,398.58	18,329,983,650	17,413,484	1001
50	Palm Beach	169,554.39	168,502,259,637	160,077,147	944
18	Flagler	12,738.31	11,897,528,655	11,302,652	887
60	Sumter	7,381.42	6,400,710,439	6,080,675	824
55	St. Johns	28,787.48	24,578,936,212	23,349,989	811
41	Manatee	42,095.54	33,099,465,252	31,444,492	747
45	Nassau	11,026.08	8,633,670,144	8,201,987	744
13	Miami-Dade	342,677.77	258,145,375,277	245,238,107	716
3	Bay	25,232.05	18,991,132,748	18,041,576	715
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52	Pinellas	105,453.24	78,271,018,927	74,357,468	705
6	Broward	254,898.34	176,830,926,919	167,989,381	659
48	Orange	170,035.61	112,467,291,492	106,843,927	628
46	Okaloosa	29,050.33	18,410,992,070	17,490,442	602
64	Volusia	62,886.86	39,735,844,477	37,749,052	600
56	St. Lucie	38,226.53	23,141,320,030	21,984,254	575
5	Brevard	72,200.50	41,482,005,385	39,407,905	546
35	Lake	40,151.05	22,737,182,842	21,600,324	538
33	Jefferson	1,103.62	621,186,733	590,127	535
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22	Glades	1,403.39	726,618,593	690,288	492
27	Hernando	22,636.28	11,452,141,804	10,879,535	481
1	Alachua	27,293.04	13,713,347,543	13,027,680	477
62	Taylor	2,954.88	1,465,307,511	1,392,042	471
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61	Suwannee	5,861.48	1,802,799,414	1,712,659	292
65	Wakulla	5,201.39	1,593,537,258	1,513,860	291
4	Bradford	3,235.49	942,103,857	894,999	277
12	Columbia	9,990.66	2,810,618,069	2,670,087	267
21	Gilchrist	2,643.62	731,272,524	694,709	263
40	Madison	2,733.07	742,838,066	705,696	258
20	Gadsden	5,963.10	1,518,898,504	1,442,954	242
34	Lafayette	1,088.65	250,357,700	237,840	218
32	Jackson	7,076.13	1,553,119,549	1,475,464	209
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30	Holmes	3,342.38	452,493,551	429,869	129
63	Union	2,224.97	249,479,149	237,005	107
68	Washington Special	475.68	0	0	0
69	FAMU Lab School	444.23	0	0	0
70	FAU - Palm Beach	619.61	0	0	0
71	FAU - St. Lucie	1,383.11	0	0	0
72	FSU Lab - Broward	646.50	0	0	0
73	FSU Lab - Leon	1,606.31	0	0	0
74	UF Lab School	1,146.77	0	0	0
75	Virtual School	14,000.01	0	0	0
	Total	2,618,006.46	1,814,378,625,064	1,723,659,696	658

The Center for Education Reform 'RACE TO THE TOP' FOR CHARTER SCHOOLS

Which States Have What It Takes to Win

Charter School Law Ranking and Scorecard 2010

LAW	
Year Passed	1996; last amended in 2008.
Rank	12th strongest of the nation's 40 charter laws.
Grade	B
GENERAL DATA	
	â€¢ Steady growth despite many state regulations, including class size requirements â€¢ Unchallenged lawsuit against newly created independent authorizer limits approval to school boards â€¢ Funding is complicated and inadequate
MULTIPLE AUTHORIZERS - NO	
Approval	School boards (In December 2008, the state First District Court of Appeals ruled that the creation of the independent authorizer, the Florida Schools of Excellence Commission, was unconstitutional. The state did not appeal the ruling despite legal opinions supporting its constitutionality and it ceased operations.)
Appeal	Yes. Applications denied by the school board may be appealed to the State Board of Education whose decision is binding.
NUMBER OF SCHOOLS ALLOWED	
Cap	No cap
OPERATIONAL AUTONOMY	
State	Yes. Blanket waiver from state and local rules and regulations. Specific statewide statutes, such as class size limitations, apply to charter schools with no exemptions. Virtual schools are allowed. Management contracts with ESPs are not restricted.
Local	Yes. Charter schools are exempt from most local school rules and regulations with certain exceptions as prescribed by the district.

Teacher Freedom	Yes. Teachers choose to remain covered by district bargaining agreement, negotiate as a separate unit, or work independently. Teachers on approved leaves of absence must participate in state's retirement system.
EQUITY	
Student Funding	â€¢ Funding for charter schools follows same formula used for all other public schools minus administrative fees retained by school boards. â€¢ Funds pass through the district. â€¢ Average per pupil revenue - $6,200 *"Students enrolled in a charter school, regardless of the sponsorship, shall be funded as if they are in a basic program or a special program, the same as students enrolled in other public schools in the school district. (b) The basis for the agreement for funding students enrolled in a charter school shall be the sum of the school district's operating funds from the Florida Education Finance Program as provided in s. 1011.62 and the General Appropriations Act, including gross state and local funds, discretionary lottery funds, and funds from the school district's current operating discretionary millage levy; divided by total funded weighted full-time equivalent students in the school district; multiplied by the weighted full-time equivalent students for the charter school. Charter schools whose students or programs meet the eligibility criteria in law shall be entitled to their proportionate share of categorical program funds included in the total funds available in the Florida Education Finance Program by the Legislature, including transportation."* [Fla. Stat. Â§ 1002.33(17)(b)]
Facilities Funding	Yes. The state has appropriated $57 million in its capital outlay program for per pupil facilities funding, which may be used for purchasing, construction, or maintenance of facilities. It is limited to charters that meet certain criteria, including: operation for at least three years, accredited by the Southern Association of Colleges and Schools, financially and academically stable, and is an expanded feeder chain or charter within the same district (meaning an elementary charter serves a middle school which serves a high school charter.) [Fla. Stat. Â§ 1013.62(e)]

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F2-2: AMERICA JOURNAL OF EDUCATION ARTICLE

Charter Ranking Roulette: An Analysis of Reports That Grade States' Charter School Laws

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Since 1996, the Center for Education Reform has released an annual report card, grading each state's charter school legislation and labeling as the "strongest" those laws placing the fewest and slightest restrictions on charter schools. While the Center for Education Reform rankings have undoubtedly been the most influential, at least four other systems have been developed. In this article, we analyze the different ranking systems, including a new approach we have developed in order to illustrate the arbitrariness of any given ranking system and to highlight some key charter school issues. We then investigate the general, popular phenomenon of rankings in the field of education, exploring the benefits, drawbacks, and appeal of such rankings.

Introduction

Since 1996, the Center for Education Reform (CER) has released an annual state-by-state report card, grading each state's charter school legislation on a scale of "strong" to "weak" (see CER 2006). These ratings assess the free-market emphasis of each state's law; those laws placing the fewest and weakest restrictions on the formation and operation of charter schools are identified as the strongest laws. This approach is consistent with two of the rationales behind the charter school movement: an opposition to governmentally imposed rules and restrictions and a trust in the pressures of the competitive marketplace.

The CER rankings have been influential. Each year when the grades are released, newspapers publish credulous stories identifying their home state law as strong or weak (e.g., Lucadamo 2003; *Pueblo Chieftain* 1998). Purportedly impartial organizations such as the Education Resources Information Center

Electronically published December 14, 2007
American Journal of Education 114 (February 2008)

0195-6744/2008/11402-0005$10.00

(ERIC) have similarly reproduced the CER rankings with no critique or cautionary note (Hadderman 1998). *Education Week*'s "Quality Counts" has uncritically incorporated CER's charter law grades into its own state rankings (Orlofsky and Olson 2001). As Scott and Barber (2002, 5) note, "It is common to find the strong/weak framework used in news media reports and academic research without explication of its meaning. We suspect that some use the descriptor without knowing the values supporting it."

Yet a variety of goals and visions for charter schools have never been included in CER's reports. For instance, among the prominent initial goals for the charter movement are such items as curricular innovation and service to at-risk student populations (Bulkley and Fisler 2002). Omitting these and other initial objectives has the effect of shifting the goalposts—judging the value of laws by different standards than those on which the laws were established. Moreover, a person is effectively misled if she is simply told, "The charter school law in State X got a grade of C," without also being informed of assessment criteria as well as the political goals and ideological beliefs underlying the grade.

At least four other approaches have been proposed as alternatives for gauging the value and success of charter school laws (AFT 1996; Miron 2005; Scott and Barber 2002; Witte et al. 2003). In this article, we supplement these four alternative proposals with one of our own, not so much to propose an improved grading system but rather to critique the current use of rankings through a series of comparisons. More broadly, we then expand our focus on existing and potential charter law rankings into an exploration of the general, popular phenomenon of rankings in the field of education.

Charter Schools

In 1974, Ray Budde presented a paper suggesting that local school boards grant contracts, which he called "charters," to teachers to explore new teaching

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ideas in exchange for increased accountability (Budde 1988). The idea gathered dust until he published it in 1988 and caught the attention of Albert Shanker, then president of the American Federation of Teachers (AFT). Shanker further publicized and expanded this concept by proposing that local school boards provide charters to form new schools (Bracey 2000; Nathan 1996a). In 1991, Minnesota became the first state to pass charter school legislation (Hadderman 1998). Since that time, the number of charter schools has grown at a rapid pace. Currently, 40 states plus the District of Columbia have charter schools, with total enrollment exceeding 1 million (CER 2007).

The approach gained bipartisan support, much of which still exists. However, research indicates that the schools have, on average, little or no positive effect on student achievement but do have unintended consequences (Carnoy et al. 2005), calling into question the long-term vitality of the reform. Several studies show increased student segregation—by race, socioeconomic status, prior test scores, and special education status (Bifulco and Ladd 2006; Cobb and Glass 1999; Howe et al. 2001; Howe and Welner 2002; Weiher and Tedin 2002). In addition, charter schools can cause adverse budgetary consequences to local public school districts (Plank and Sykes 1999; Smith et al. 2003).

Author Perspective

One of our contentions in this article is that ranking systems are most worthwhile when readers understand the values, interests, and perspectives of the authors. A key element of our own perspective arises out of our overarching concern for educational equity. We take very seriously the research showing an association between increased charter schools and increased segregation. At the same time, we are heartened by those charter schools that provide new and promising opportunities to low-income students of color, among others. This perspective is seen, for instance, in our inclusion of the reform goal of serving at-risk children. More broadly, we place a high value on policy making being informed by comprehensive and comprehensible reporting of research.

Study Overview

Evaluation criteria are not value-free (House and Howe 1999). Rather, these criteria can arise from such sources as a client's request, the evaluator's own values, or a desire to make the evaluation useful (Joint Committee on Standards 1994). CER's rankings frame the charter school movement and the success of that movement around a set of beliefs that places the highest value on the free market. From this perspective, a charter school law with fewer governmental constraints is, by definition, good and strong.[1] In contrast, the evaluation approach advocated by the AFT penalizes charter school legislation that tends to create an alternative school system serving a few, select students; it rewards charter school legislation that serves a broader public interest and facilitates improvement of the public education system (AFT 1996).

But these are just two options; we found three others. Witte et al. (2003) use two dimensions to analyze charter school laws: (1) the laws' flexibility, freedom, and support for the new schools and (2) the degree of public accountability required of charter schools. The first dimension is similar to the CER approach; the second dimension adds criteria that Witte and his colleagues consider to be key to a more complete evaluation. Scott and Barber (2002) analyze charter school legislation from three prominent states—California, Arizona, and Michigan—using a framework that examines how well the laws advance the goals of choice, productive efficiency, equity, and social cohesion. Miron (2005) focuses on factors that he has empirically found to be important for higher student achievement in charter schools.

The first part of this article describes the CER rankings and their influence. Next, we present the alternatives developed by the AFT (1996), Miron (2005), Scott and Barber (2002), and Witte et al. (2003). To these, we add a fifth alternative, designed by us to emphasize our critique of the capriciousness of rankings. In our alternative, we view the success of the charter school movement as dependent, at least in part, on the degree to which it is designed to accomplish the goals on which the concept was originally promoted.

Together, these six different approaches highlight the arbitrariness of any given ranking system. A reader with a complete understanding of the ranking criteria could make good use of any of these approaches. However, the rankings by themselves, without that complete understanding, are confusing and misleading.

The article's final section uses this case study to more broadly consider the popularity of rankings in the field of education. Given that the media and the broader public tend to find these rankings interesting and useful, we consider how such information might be more critically presented and consumed.

Ranking and Evaluation Approaches

In table 1, we have set forth a summary comparison of the various criteria used in these six approaches. Looking down the columns, one sees different emphases for each rating or evaluation method: (*a*) autonomy and growth (CER), (*b*) broad benefits to public education (AFT), (*c*) competing values (Scott and Barber), (*d*) flexibility and accountability (Witte et al.), (*e*) empirically

TABLE 1

Comparison of Evaluation Criteria

	CER	AFT (1996)	Scott and Barber (2002)	Witte et al. (2003)	Miron (2005)	Chi and Wellner (2008)
Assistance in creating new schools	Y			Y	Y	
Bipartisan support for legislation					Y	
Broad service to community		Y				
Equity			Y			Y
Facilitates improvement of the public education system		Y				
Facilitates innovation within the public realm						Y
Faster and more growth	Y					
Less regulation and more choice	Y		Y	Y		
Minimal (and overseen) involvement by for-profits (EMOs)					Y	Y
Productive efficiency			Y			
Public accountability (renewal procedures, performance reports, and fulfillment of state standards)				Y		Y
Results in higher student achievement						Y
Rigorous approval process					Y	
Rigorous oversight process					Y	Y
Slow growth to allow for learning and adjustments					Y	Y
Social cohesion			Y			
State financial support	Y				Y	
Strong evaluation component					Y	Y

NOTE.—CER = Center for Education Reform; AFT = American Federation of Teachers; EMOs = educational management organizations.

derived criteria of effectiveness (Miron), and (*f*) original rationales and goals (Chi and Welner). These approaches and criteria are each discussed below.

Autonomy and Growth

From the perspective of CER, the best charter school laws are those that facilitate the easiest path for charter creation and the least regulation for operating charters. In a nutshell, CER favors a free market for the creation and operation of charter schools. Laissez-faire rules are seen as the way to improve educational quality and efficiency, with charters using their autonomy to innovate, to enhance parental involvement and teacher professional opportunities, and "to create focused learning communities and high levels of accountability, . . . [which] will result in higher levels of performance" (Miron 2005, 1–2).

In its 2006 rankings, CER used 10 criteria—focused on faster and easier growth in the number of schools and on greater autonomy for those schools—for its determination of strong charter school laws (those criteria are set forth in full on p. 5 of CER [2006]). These criteria were then applied to states' laws by a panel of free-market advocates from the CER itself, as well as the Fordham Foundation, the Hudson Institute, and the Pioneer Institute (CER 2001, 1). Of note, the political and ideological goals embodied in the CER criteria were also embodied in this panel that applied the criteria. The rankings are essentially an applied version of a shared free-market ideology among these panel members. Accordingly, a hypothetical spokesperson for an organization might say, "Charter schools should be completely freed from the restraints of labor agreements and state regulation." Or she might say, "Arizona's charter school laws are strong because they are overwhelmingly freed from the restraints of labor agreements and state regulation." The second statement is no less subjectively linked to ideology than the first.

Broad Benefits to Public Education

As noted above, the late AFT president Albert Shanker was one of the earliest proponents of charter schools (Shanker 1988). In 2002, however, the union released a well-publicized report concluding that student achievement was no better (and was sometimes worse) in charter schools as opposed to other public schools. More important for our purposes, the report criticized the shift in the justification for charter schools "from one that is based on education and innovation to one that is based on choice and competition" (AFT 2002, 7).

Six years earlier, the AFT had released a report that raised some of these same concerns but did so in a more preliminary and less critical way. That AFT (1996) report essentially pushed for their preferred model of charter schools in the same way that the CER reports push for theirs. The evaluative criteria set forth by AFT include "the likelihood that [the law] will produce quality schools"; yield "examples of how the larger system of public schools should operate"; "allow for experimentation, while at the same time ensuring quality schooling within a system that protects the public interest and the integrity of public education"; avoid producing "an alternative school system created for a few, but operating at the expense of many"; ensure "public accountability for student achievement"; guarantee "accessibility [for] all students"; and empower teachers (AFT 1996, 7).

The report's application of these criteria to each state's laws did not result in a ranking or a graded report card. Instead, each state's system is described and critiqued, along with summary statements such as, "California meets most of the criteria for good charter school legislation. However, it does not extend collective bargaining for employees to new charter schools and does not require teacher certification" (AFT 1996, 35). The report concludes that no state's charter school legislation satisfied all the criteria indicating a good law "likely to produce quality education and be the basis for widespread reform of public education" (AFT 1996, 15). Arizona, the state held out by CER for the most praise, drew the harshest criticism from the AFT because its law "emphasizes the quantity of schools created rather than the quality of education provided" (AFT 1996, 15).

Competing Values

To critique the CER and AFT approaches, Janelle Scott and Margaret Barber formulated a framework grounded in four competing values concerning schooling in the United States (Scott and Barber 2002). The rubric they applied was developed by Henry Levin in the context of vouchers (Levin 2000). Scott and Barber propose that state charter school laws be analyzed based on pursuit of one or more of the following four goals: choice, productive efficiency, equity, and social cohesion. The final term is defined as "the extent to which the public school systems promote common educational experiences to diverse populations of students" (Scott and Barber 2002, 30). Using this four-goal rubric, they highlight the values inherent in the AFT and CER frameworks: "absent from the CER rubric are any provisions for student access, optimal working conditions for teachers, or targeted resources for charter schools serving low-income populations. The AFT framework emphasizes more regulation and potentially less freedom of choice" (Scott and Barber 2002, 6).

Importantly, Scott and Barber do not reject the usefulness of frameworks grounded in such values; instead, they persuasively assert that value orientations in such evaluations should be overt. Moreover, they emphasize the conflicting values inherent in policy decisions of this nature. Their framework brings these conflicts to the fore, helping policy makers realize that their decisions regarding charter school legislation will involve important trade-offs. Given this approach, it should not be surprising that Scott and Barber do not grade or rank the state laws; the framework provides no basis on which to prefer, for instance, a law that emphasizes equity at the expense of choice or emphasizes choice at the expense of social cohesion. Which set of rules is preferable is a decision to be made by informed policy makers.

Flexibility and Accountability

The CER rankings were also critiqued at the outset of a paper by Witte et al. (2003), but the criteria they settled on have a great deal in common with CER's. These authors retained the basic CER tenet that a law with more "flexibility" (their term for fewer legal restrictions) should receive higher scores. However, they also "argue that these [charter school] laws are multidimensional; something that the CER scale fails to capture" (Witte et al. 2003, 1). Accordingly, they added a second dimension, focused on the level of public accountability required of charter schools. This dimension has three elements: renewal procedures, performance reports, and fulfillment of state standards. Applying these criteria to the states, they found a high correlation between flexibility and accountability. That is, laws that tend to have a more free-market orientation also tend to require more public accountability, so the resulting state-level ratings for the laws are similar to CER's (although Witte's paper sets forth this conclusion, it does not include a state-by-state listing of the ratings).

Empirically Derived Criteria of Effectiveness

As of early 2005, Gary Miron had conducted nine large-scale evaluations of charter schools, in six different states (Michigan in 1999 and 2002, Pennsylvania in 2000 and 2002, Illinois in 2002, Connecticut in 2002 and 2005, Ohio in 2005, and Delaware in 2004). Based on those evaluations and on a study of the correlates of success in charter schools, he contends that the criteria for considering strong charter school laws should be empirically derived. That is, since we now have a good idea about what works, we should judge the laws with that knowledge in mind. As did the other authors discussed above, Miron (2005) begins his paper with a critique of the CER approach:

TABLE 2

Comparison of Miron's Judgments, CER's 2006 Rankings, and Chi and Welner's Rankings

	Miron	CER	Chi and Welner
Delaware	First (strongest)	A (third strongest in United States)	B (ninth strongest in United States)
Connecticut	Second (strongest)	C (thirty-first strongest)	B (twelfth strongest)
Pennsylvania	Third (moderate)	B (eleventh strongest)	D (thirty-first strongest)
Illinois	Fourth (moderate)	C (twenty-eighth strongest)	A (fourth strongest)
Ohio	Fifth (weak)	B (twelfth strongest)	B (sixteenth strongest)
Michigan	Sixth (weak)	A (fifth strongest)	F (fortieth strongest)

NOTE.—CER = Center for Education Reform.

"Contrary to [the CER] assumptions, we have seen from our research and state evaluations that permissive laws and states with large numbers of charter schools are often less likely to have positive outcomes" (Miron 2005, 1).

Miron and his colleagues judged two of their six states to have charter school reforms with weak or mixed results (Pennsylvania and Illinois), two with positive results (Connecticut and Delaware), and two with negative results (Michigan and Ohio; Miron 2005). Table 2 shows no obvious correlation between Miron's rankings, the CER (2006) rankings, and our own rankings (discussed further below). Although all agree that Delaware's law is strong, the differing approaches reach very different judgments about the other five states.

Comparing his successful and unsuccessful states, Miron (2005) identifies eight key components of strong charter school laws. These include only two items (assistance in creating new schools and the need to have solid state financial support) that are an area of clear agreement with CER (2006) and several items (slow growth, as well as rigorous oversight and approval) that are in direct conflict with CER (see table 1).

Original Rationales and Goals

We find a great deal that is sensible and useful in these earlier evaluative and ranking criteria. But we contend that they all pay insufficient heed to the original goals set forth by charter school advocates. These concerns have prompted us to develop our alternative approach to assessing the merits of charter school laws. We want to stress up front, however, that rather than simply adding one more voice to the dissonant chorus championing some state's laws above others, we are presenting this alternative ranking system to highlight our critique. Accordingly, while our exercise includes a ranking and grading of states, we emphasize that our main critique is not that the wrong criteria are used in ranking exercises; it is that the arbitrariness and underlying beliefs are not well understood by consumers.

We began by first establishing categories aligned with the initial goals of the charter school movement—those objectives that were used by charter school advocates in the early 1990s to lobby for the laws. To create a fair and comprehensive list of these goals, we went back to early, seminal works—primarily those of Joe Nathan (1994, 1996a, 1996b, 2002) and Ted Kolderie (1990, 1992, 1995; see also Bulkley and Fisler 2002; Cookson 1994; Gill et al. 2001; Henig 1994; Mintrom and Vergari 1997; and Miron 2005). We also reviewed the state charter school legislation itself to ascertain the rationales articulated by legislative authors.

Based on this comprehensive review of early charter school advocacy and of the rationales stated in state charter school legislation, we derived seven important goals: (1) curricular and instructional innovation, (2) waivers of bureaucratic rules, (3) maintaining the public nature of charter schools, (4) increased access to opportunities for at-risk students, (5) performance-based accountability, (6) increased student achievement, and (7) learning about the reform's potential and best practices through evaluation of initial small-scale efforts. We combined goals five and seven, yielding six main categories: (1) innovation, (2) waivers, (3) public realm, (4) at-risk access, (5) accountability and evaluation, and (6) achievement. From this process, we yielded seven subscale categories within the six main categories, which split into 22 items at the next level. Two primary types of sources supplied our state-level data: the state charter school laws themselves, plus existing compilations of information from organizations such as the Education Commission of the States (ECS), U.S. Charter Schools Inc. (http://www.uscharterschools.org, run by WestEd), CER, the Fordham Foundation, and the U.S. Department of Education. In general, our rankings were produced through the same approach as earlier rankings from CER and others. That is, we assigned scores and weights to each of our main categories and subcategories and then assigned cut scores in order to allot grades that differentiate between states. We used a coding scheme from -2 to $+2$, which treats neutral laws as zero. Figure 1 summarizes the scores. (For a full itemization of the scoring and a breakdown of each state's scores, please see the appendix in the electronic version of this article.) To make our exercise parallel to those of CER and others, we have also included a letter grade for each state.

For some categories, ordinal rankings are inappropriate, but the criteria lie at the heart of our concerns; our analysis of such items is presented as a narrative discussion rather than a ranking or a grading. Also, the rankings

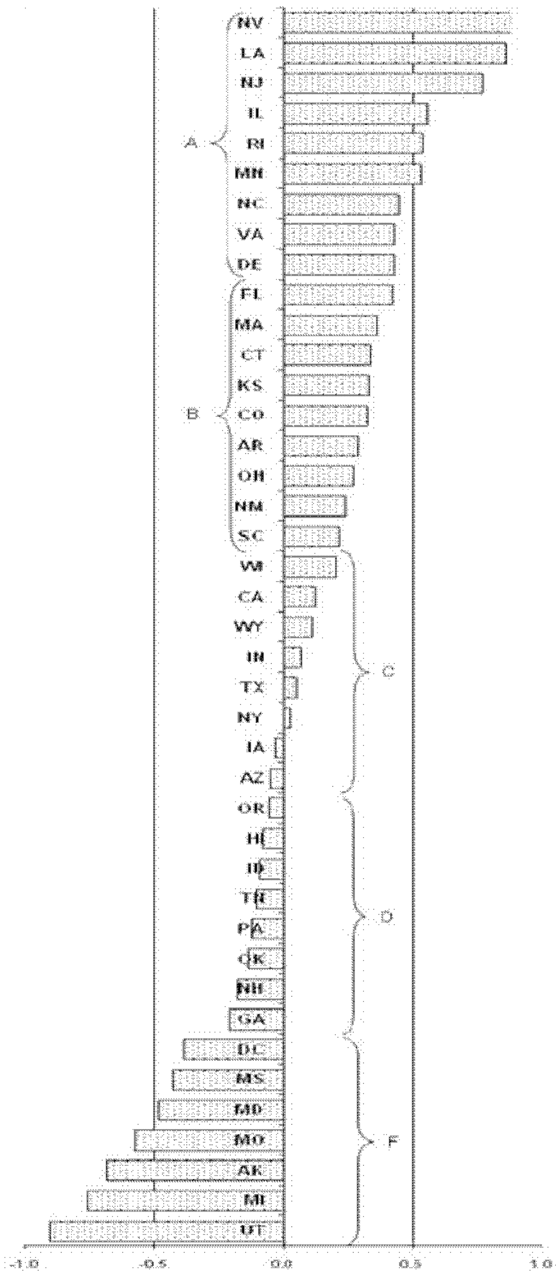

FIG. 1.—State rankings and grades

are not meant as an evaluative judgment of the efficacy of a law. That is, although we may praise a law for including a provision to promote service of at-risk populations, we are not weighing in on the question of whether that provision has been successfully implemented. Furthermore, our assigning of a grade is based only on available data; missing data are treated neutrally when appropriate, with that factor not increasing or decreasing a state's score. (For specifics, please see the appendix in the electronic version of this article.) With those caveats, we now describe the categories.

Innovation.—Our first category based on the goals of the original charter school proponents concerns the importance of innovation. The early rhetoric about innovation was extensive and powerful. Ted Kolderie expressed the general sentiment as follows: "Only new [charter] schools can stimulate the widespread innovation that public education needs" (Kolderie 1990, 7; see also the discussion in Lubienski [2001], 10–11). In a nutshell, traditional public schools were characterized as stuck in bureaucratic stagnation, rarely trying creative and new instructional approaches. Charter schools would be laboratories of new ideas; the best ideas would then be adopted by public schools if they hoped to survive in the competitive marketplace. All the while, the schools would retain their public nature (Kolderie 1990).

Even though we judge this to be a key initial goal for the reform, we do not include innovation in our ranking system because of practical difficulties in distinguishing differences in state laws. Further, judging from the analysis of Lubienski (2001) as well as the lack of specifics in laws, the vast majority of states do not appear to be demonstrating any serious commitment to this issue (see also Wong and Shen 2001). Only one state, Massachusetts, indicates a preference for applications with an innovative educational plan (see ECS 2006). It appears that state laws have incorporated, in their legislative intent, the rhetoric concerning the importance of innovation, but authorization rules and funding opportunities do not concretely advance the goal.

Lubienski (2001) points out that the same market mechanisms that were expected to prompt innovation may actually be stifling it. A new school hoping to attract customers is often wise to base that appeal on a known commodity. Traditional instructional approaches are thus very common in charter schools (Lubienski 2001). Of course, charter schools do bring, almost by definition, innovation in school governance. And, as Lubienski (2001) notes, they also tend to lead to more diversification of instructional models, giving parents options in a more diverse marketplace. However, our "original intent" focus asks whether states have effectively promoted curricular and pedagogical innovation, and the various state laws appear to have come up short.

Waivers.—Our second category involves the waiver provisions of state laws. Through the granting of waivers from burdensome, bureaucratic provisions, charter schools are intended to have more autonomy in exchange for greater accountability (an issue discussed later in this article). Early charter school advocates believed that an increase in autonomy through these waiver provisions would contribute to favorable outcomes such as higher student achievement and progress toward educational equity (Nathan 1996a). State law waiver provisions include automatic waivers, specified waivers, exemptions at the discretion of the state board of education, and waivers provided in each specific charter. We have no empirical or even strong theoretical basis to favor one type of waiver provision over another—particularly one that links back to the early goals of the charter school movement. Thus, we have decided to forgo the grading of these provisions.

Public realm.—In contrast, the public realm aspect of charter schools can be graded. For instance, the extensive involvement of private entities, such as educational management organizations (EMOs), in the provision of instructional services is contradictory to the goal of having charter schools remain within the public realm, as opposed to a shift from public to private in the provision of services. Early advocates of charter schools focused on the public nature of these schools, arguing that their creation would increase the parental choices for public education (Bulkley and Fisler 2002). The role of EMOs can vary widely, from contracting a specific service to managing the entire school (Bulkley and Fisler 2002). By definition, such privatization detracts from the public nature of charter schools (see Molnar [2001] for a more complete critique). Notwithstanding some potential advantages to private-sector involvement—primarily, the infusion of stronger market forces—laws (even those providing for public oversight) that allow for greater EMO involvement undermine the initial vision of charter policies as a public-realm, school-choice alternative to voucher policies. For this reason, we rewarded states that have legislative provisions prohibiting for-profit organizations from applying for charter schools. This reward was greater for states that go beyond prohibiting applications to also prohibiting for-profit organizations from operating or managing the schools under contract with the nominal applicant.

At-risk access.—Early advocates believed that the charter school movement would lead to increased access to opportunities for at-risk students, and whether charters are achieving this goal has been the subject of considerable research (see Bracey 2000; Gill et al. 2001; Nathan 1996a). In a nutshell, the variation among states is extensive. In states where charter schools tend to be located in suburban areas (e.g., Colorado), they enroll a relatively small percentage of students of color and students of poverty. In states where charter schools tend to be located in urban areas (e.g., Michigan), they enroll a relatively large percentage of such students. Yet the more important empirical question for those interested in issues of stratification is not at the state level; it is at the community level. How do charter schools compare to their neighborhood public schools in terms of enrollment of at-risk students? Local segregation associated with school choice appears to be happening in some, but not all, jurisdictions (see Bifulco and Ladd 2006; Booker et al. 2005; Weiher and Tedin 2002; Wong and Shen 2001).

As reflected in our grading procedures, state charter school laws themselves can advance the needs of at-risk communities by giving priority to schools that are specifically designed to address those needs, as well as by encouraging and favoring schools that are designed to limit segregation. Since our analysis looked at laws in effect prior to the 2007 Supreme Court case barring race-conscious student assignment policies (*Parents Involved in Community Schools v. Seattle School District*, 127 S.Ct. 2738, 168 L. Ed.2d 508 [2007]), we counted racial guideline provisions as indicators that the state is striving to make charter schools accessible to at-risk students. Specifically, it would be commendable for states to push for a charter's racial enrollment to reflect the surrounding school district. Federal regulations as well as equal protection jurisprudence essentially prevent states from requiring charter schools to use race or ethnicity as a selection criterion in making individual enrollment decisions. Under the federal regulations (applicable to charters that receive assistance through the federal charter school grants program), schools must use a random lottery when oversubscribed (the regulations allow some preferences for, e.g., children of a school's founders, but no preferences are allowed for at-risk students or for the promotion of a diverse student body; U.S. Department of Education 2004b). However, all charter schools can seek to increase applications by minority or underrepresented groups, as they are mandated to do in Connecticut (*Connecticut General Statutes*, sec. 10-66bb).

At-risk students may also be harmed if states allow preferential treatment in the charter school application process to one or more groups of privileged applicants. For instance, access for at-risk students tends to be hampered when charter schools grant a preference to students who are children of founders and teachers. Our ranking system reflects this concern. In contrast, we rewarded states that increase access to opportunities for at-risk students by creating charter schools that serve at-risk students or that recruit at-risk populations.

The accessibility of charter schools to at-risk students is also affected by the transportation accommodations for these students, as the lack of transportation can disproportionately prevent at-risk students from attending charter schools. Accordingly, our grading system rewards laws that require charter applicants to include a transportation plan in their applications, indicating an effort toward transportation accommodations for students. Even more important, some state laws provide transportation for charter school students residing within a certain distance of the school. Most impressively, the charter school law in Kansas has a transportation provision targeting low-income students.

A subset of the at-risk population is composed of students with disabilities.

Because of real and perceived costs, some charter schools have attempted to avoid enrolling such students (Welner and Howe 2005). To prevent such behavior, federal law requires all charter schools to have nondiscriminatory admission procedures, and some states demonstrate commitment to this issue by expressly prohibiting discrimination in admissions on the basis of disability in their charter school laws. Furthermore, it is commendable when state laws favor applications that express a focus on accommodating special education students or that show a preference for at-risk students. States are also rewarded in our grading system for including provisions identifying at-risk students as target populations (Fiore and Cashman 1998).

Accountability and evaluation.—Charter schools were proposed as an innovation with the potential to improve education by shifting from bureaucratic accountability to performance-based accountability. Each charter contract would set forth how the particular school would be held accountable. Accountability, then, varied in its particulars from school to school, but the unifying constant was that charter schools would all be expected to demonstrate their performance.

An important factor, which we found only partially gradable, is related to charter revocation. Early charter school proponents believed that the fear of revocation would motivate schools to perform (Kolderie 1990). If promised outcomes are not achieved, then the school's side of the contract is not met, and the charter will be revoked or nonrenewed. Many states include boilerplate language concerning revocation. Most charter school laws (all except Maryland) list grounds for terminating a school's charter, and many are similar in content and phrasing (ECS 2006).[2] Inclusion of such provisions is a positive feature of laws, even if the language appears to be pro forma, since it provides criteria for determining whether to revoke a charter. Among other things, this helps to address due-process concerns about adequate notice.

Our grading procedure rewarded states that allow charter schools to have an opportunity to cure a violation. Evaluative procedures should be in place such that charter schools that are in danger of being revoked due to a violation are, except in extreme cases, notified in advance and thus have the chance to solve their problems. However, states must be willing to revoke charters if necessary; otherwise, charter schools are no longer held accountable. In this subcategory, we developed an index by dividing the percentage of revocations by the number of years that the state has had charter schools. The index represents the degree to which states enforce the closure of their schools. In addition, states that allow revocations to occur via voting procedures illustrate the degree to which they are willing to revoke. Specifically, some states indicate that they will terminate a charter school if there is a majority vote from the staff or parents in support of revocation.

The accountability of charter schools is also dependent on adequate monitoring and evaluative procedures. States should have a system in place that provides monitoring on a regular basis. Specifically, according to the Fordham Foundation, states vary in their ability to provide "periodic announced visits by authorizers," to require "periodic financial audits and progress reports," and to supply a method of reviewing reports, flagging problems, and notifying schools (Palmer and Gau 2003, 108). Moreover, monitoring should extend to the enforcement of school improvement actions and the oversight of academic achievement unrelated to No Child Left Behind (NCLB) academic performance goals (U.S. Government Accountability Office 2005).

A thorough evaluation of each school ensures accountability by encouraging the approval of only high-quality charter applications and the closure of schools that are performing poorly (Miron 2005). Until 2002, however, some states did not include charter schools in their standards-based testing policies (NCLB now effectively requires such inclusion). Moreover, while the accountability of charter schools is most often framed in terms of student achievement, charter school closures have more often been due to organizational problems such as management and fiscal failures than due to issues of achievement (Bulkley and Fisler 2002).

The above accountability and evaluation factors were graded as seven different items and used to generate an evaluation subscore. Similarly, three items of the accountability and evaluation category were graded as components of a subscore concerning issues of charter duration and caps. Contrary to CER's view that states have strong charter school laws if they do not limit the number of charter schools to be formed, we believe that there should be a cap on the number of charter schools a state can have, in order to support the pilot study/evaluation aspect of the charter school movement (Miron 2005). Early charter school advocates believed in the evaluation of initial small-scale efforts to learn about the potential of charter school reform. Kolderie, for instance, described a "gradual development" of a system of charter schools, including a process of "evaluating the performance" of the reform as it moves along (1990, 9). Given that extant research findings raise serious questions about the effects of charter policies, the initial ideas favoring pilot studies and careful evaluation are still salient. Although caps constrain free-market pressures and effectively reduce parental choice, states' failure to place a cap on the number of charter schools creates an unregulated environment that can be detrimental to students and to the long-term success of the charter school movement. A cap provision may allow only a certain number of charter schools within a geographic region, may allow the number to increase incrementally, or may set an absolute cap statewide. All of these types of caps allow for some control over the development of charter schools, although a true cap provides the most concrete regulation.

The duration of a charter is also indicative of a good law. Longer charters undermine two goals: (1) pilot study/evaluation and (2) accountability for obligations in the charter contract. Even charter schools that have been in existence for a substantial period of time should have relatively short charter terms since the accountability design for all charters requires the monitoring and evaluation that takes place during reauthorization. States should also require meaningful reviews before the charter term expires. Each of these factors is included in the caps/duration subscore.

Achievement.—Our sixth main category focuses on issues of student achievement. The need for increased student achievement was a main impetus of early charter school advocates, who argued that improvements would result from autonomy, competition, innovation, and accountability (Bulkley and Fisler 2002).

We have, however, not included a score for achievement because valid outcome measures at the state level are largely unavailable. The issue of how to best measure achievement outcomes is itself the subject of a great deal of controversy. Most studies reporting on charter achievement have little value because they simply compare average scores of students in each sector (charters and noncharters) without accounting for differences in the enrolled students. Not surprisingly, in states such as Michigan, where charters are located in lower-scoring urban areas, the charters do less well; in states such as Colorado, where charters are located in higher-scoring suburban areas, charters do better.

Higher-quality longitudinal and cross-sectional studies control for such enrollment differences (e.g., Bifulco and Ladd 2003; Braun et al. 2006; Finnigan et al. 2004; Lubienski and Lubienski 2006; Sass 2006; U.S. Department of Education 2004a) and have tended to show that charter schools perform less well or at the same level as compared to other public schools (see discussion in Carnoy et al. [2005]). At least one study reached the opposite conclusion (Hoxby 2004; for a critique of Hoxby's analysis, see Roy and Mishel [2005]). For our purposes, we think it most important simply to note that any attempt to judge the success of a given state's charter school policy should include a rigorous examination of student outcomes. In this regard, we stress that outcomes studied should move beyond achievement tests to include other outcomes of importance such as graduation, matriculation to college or obtaining of employment, as well as attendance and dropout rates.

The Results of Our Ranking System

The big winners under our ranking system were Nevada, Louisiana, and New Jersey; those faring the worst were led by Missouri, Alaska, Michigan, and Utah (see fig. 1, as well as the appendix in the electronic version of this article). Because the criteria we have chosen derive from our perspective and values, these same findings could be honestly presented as, "The charter school laws in the states of Nevada, Louisiana, and New Jersey best reflect the original goals of charter policies that we have identified." Alternatively, an advocacy approach to reporting our findings might be worded as, "The charter laws in Missouri, Alaska, Michigan, and Utah all earned a grade of F. Lawmakers in those states would do well to reform their policies to better serve at-risk children, forbid EMO involvement, and so on." In the final section of this article, we discuss the reasons why authors sometimes decide to present findings using this latter, advocacy approach—and we discuss the policy-discourse repercussions of those decisions.

The Appeal of Rankings

The recent critiques of CER's approach by Miron (2005), Scott and Barber (2002), and Witte et al. (2003) went largely unnoticed. Perhaps this is in part because none of these reports included state-by-state rankings or grades of their own. For the media, they offered no hook, no lede, and no headline. In contrast, the CER rankings allow a newspaper an obvious headline and an easy local angle: "Michigan Charter Schools Get an 'A'" or "Illinois Charter Law Earns 'C' on National Report Card." Consider the following article published in the *Pueblo Chieftain,* titled, "Pueblo Charter Schools Help State Rank High in Evaluations":

> Pueblo, with its Connect School and the Pueblo School for Arts and Sciences, was an early entry in the American trend toward the charter school. . . . Earlier this month, the Center for Education Reform in Washington, D.C., released its third ranking of evaluation of [*sic*] charter school laws. Colorado moved up to 11th from 14th in the CER's assessment of state-law effectiveness. . . . Twenty-three of the laws, including Colorado's, were assessed as being strong or moderately strong, by the CER. . . . The evaluation is based on 10 categories and a detailed, individual profile on each law, said Jeanne Allen, CER president. . . . Allen said that in some states, red tape cripples charter laws from the outset. She claims that traditional public school people fight against making the new schools successful. (*Pueblo Chieftain* 1998)

If CER and its president had merely sent out an essay condemning red tape or attacking "traditional public school people" or had sent out a press release consisting simply of criticism and praise for various states, such newspaper articles would likely not be written. Accordingly, the organization chose a more newsworthy approach; each state was given a rank and then a grade.

Judgments were quantified, generating winners and losers, with the final grade giving these judgments an aura of objectivity.

In the newspaper business, there is a world of difference between "Bob Is a Good Student" and "Report Card Gives Bob an A." Readers like concrete competitions. They like following their team's standings and the horse-race aspect of election news coverage. They like movie ratings on a scale of 1–10 (or a mere thumbs up or down). At a more sophisticated level, they like the decision-making assistance provided by rankings in *Consumer Reports*. Ratings, rankings, and grades offer a shorthand allowing for quick, easy assessments and conclusions. For those with little interest in a subject or for those who simply do not have time to invest in learning about the subject in depth, nuance is the enemy. Lists, grades, and rankings are not just an efficient way to present information; they are also often enjoyable to compile and read.

The field of education is home to one of the most successful and influential rankings franchises. *U.S. News and World Report* annually ranks colleges and universities for undergraduate education as well as individual graduate programs. These rankings have drawn considerable criticism, focused on the arbitrariness of the (often-changing) formula used to calculate the rankings and focused also on the resulting distorted decision making by prospective applicants and higher-education institutions (Clarke 2004; Gottlieb 1999). Higher education rankings, however, are not limited to *U.S. News*. Shanghai's Jiao Tong University's ranking of the top five hundred public and private universities worldwide is now a regular newsworthy event (Economist 2005; see also http://ed.sjtu.edu.cn/ranking.htm). The *Times* of London's Higher Education Supplement rankings (http://www.thes.co.uk/worldrankings/) covers much of the same ground. The National Center for Public Policy and Higher Education grades state higher education systems on a variety of indicators including affordability, preparation, and completion (National Center for Public Policy and Higher Education 2004). The Education Trust recently issued a report assigning grades to flagship public universities, based on the degree to which they equitably serve the minority and low-income students in their states (Gerald and Haycock 2006).

In recent years, schooling at the K–12 level has been subject to similar treatments. In addition to the charter school rankings discussed above, the Friedman Foundation grades each state's movement toward vouchers and similar free-market approaches (Enlow 2004). The Manhattan Institute produced a grading system using what it called the "Freedom Index," a free-market ranking that attempts to cumulatively account for vouchers, charter schools, and other forms of choice (Greene 2000). The Fordham Foundation has graded charter school laws on the diversity and efficacy of allowed authorizers (Palmer and Gau 2003). Another Fordham report grades state teacher credentialing, giving higher grades to those states favoring the free market over professionalization (Finn et al. 1999).[3]

Governmental and private organizations and publications have also released so-called report cards that rank states based on various criteria. States are graded on accountability, finance systems, and other factors by *Education Week*'s "Quality Counts" (*Education Week* 2005). Governments and newspapers grade and rank schools and school districts based on standardized test scores (Colorado State Board of Education 2005; Dedman 2004). Attempting to develop a franchise analogous the *U.S. News* higher education rankings, *Newsweek* now ranks top high schools based on student participation in advanced placement (AP) and international baccalaureate (IB) courses.[4] Not to be outdone, *U.S. News* just began its own high school rankings, based on standardized test scores and rates of participation and achievement in AP courses (but, apparently, not IB courses).[5] The approach also took into account the percentage of economically disadvantaged students at each school and the performance of black, Latino, and poor students.

Our examination of these rankings and reports yields mixed conclusions. The compilation of data underlying the efforts is admirable and valuable. But the grades themselves have great potential to cheapen the discourse around important issues. Complex matters of social policy are transformed into an ordinal competition. At a basic level, none of these rankings offer incorrect information (at least, we assume that none do so intentionally). If they are harmful, that harm comes about because of two other factors: (1) they can prompt changed behavior by readers and policy makers, and (2) they can be misleading, if readers do not understand the bases for the rankings. We contend that it is this second factor that most deserves attention and remediation.

The first factor can be subdivided into "intended change" and "unintended change." Intended change would include, for example, the lifting of restrictions on charter school laws in response to the CER rankings or increased AP and IB enrollment in response to the *Newsweek* rankings. Such intended changes are not harmful from the perspective of the producers of the rankings. And their harm from the perspective of others is no different from the "harm" caused by any successful policy advocacy.

Unintended change would include the increased use of early college admissions as a way to increase the "yield rate" that formerly was included in the *U.S. News* calculations (*Christian Science Monitor* 2003). But this phenomenon of unintended consequences is hardly unique to this type of policy document; attempts to change policy are rarely so refined that they only create intended effects. This does not mean that unintended consequences should be shrugged off—only that addressing them (i.e., by tinkering with the policy along the way) is common.

In contrast, there is a unique aspect to the misleading nature of grades and rankings used for policy advocacy. A value-laden report presented as objective research and accepted as such by media outlets—and given a great deal of attention because of the reader-friendly ratings/grades—clouds discourse around the issue. We suggest the following, which we think will enhance the likelihood these reports will be more critically presented and consumed. The primary responsibility lies with the reports' authors, who should clearly state limitations and explain underlying values and assumptions. But a strong secondary responsibility lies with mediating institutions. The audience for these reports is really not those who read the documents themselves; instead, readers of newspapers, and consumers of other media, learn of the content only as it is reported. Even if a report is intended to deceive, it can only do so when reporters and their editors fail to provide a critical filter. The solution to the misleading aspect to these reports thus devolves to the difficult task of working with these reporters and editors, helping them to present accurate and complete stories. Much confusion could be eliminated by two sentences near the outset of a newspaper story, reading simply, "The report card was issued by the Center for Education Reform, an advocacy group for charter schools that favors fewer regulations of those schools. States were given higher grades if their charter school laws included only minimal regulations."

We look primarily to the media because novice readers of ranking or grading reports should not be expected to understand, or even to be aware of, countervailing perspectives. Nor should they be expected to know the policy objectives of a given organization. However, we note that readers can, with little effort, learn a great deal by quickly looking to the underlying criteria. A reader who is a policy maker should be expected, at a minimum, to ask about those criteria.

Conclusion

The merits of important academic studies are tested through peer review and challenged by subsequent studies and publications. No reliable academic counterpart to this rigorous process, however, has emerged for reports issued by advocacy organizations that project their efforts directly into the policy arena.[6] Yet such advocacy documents are often more influential than even the most careful academic research. By issuing report cards, rankings, and grades, organizations have found that they can make their primary arguments easily understood and can gain influence in policy debates.

A grades- or rankings-based approach of evaluating charter school laws is necessarily value dependent. Rankings are only useful to those who understand the values underlying the exercise; otherwise, they are likely to be misleading.

The CER rankings, in particular, have received most of the publicity yet are poorly presented.[7]

Each of the six ranking systems discussed above uses different criteria to determine what makes a good charter school law, and each yields different results. Not surprisingly, our own ranking system, using criteria aligned with the initial mission of the charter school movement, produced very different grades than that of CER. The examples presented in this article underscore the problems inherent in trusting such value-dependent and inconsistent grading approaches. Yet because grades are likely to remain a popular assessment tool in the educational realm, we hope that this analysis contributes to a better understanding of these limitations.

Notes

1. The use of the terms "strong" and "weak," as applied to charter school laws, likely originated with Millot (1994) and Wohlstetter et al. (1995).

2. Miron (2005, 4), however, notes that Connecticut's successful charter policy includes rigorous oversight and that a "large proportion of poor performing [charter] schools . . . have closed." He also notes that the state imposed a temporary moratorium on the granting of new charters.

3. For an excellent example of uncritical news coverage, see the *Rocky Mountain News* article about this report, which identifies the Fordham Foundation merely as "a private Washington-based foundation that backs education research and reform" (Associated Press 1999). Nowhere in the article are readers given any information that would help them understand that the grade (Colorado received a B− in this case) was grounded on a controversial ideological goal for teacher certification.

4. *Newsweek*'s rankings are derived by dividing the total number of AP or IB tests given at a school in May by the number of seniors graduating in June. Interestingly, while the National Research Council has criticized the *Newsweek* rankings for inappropriate (invalid) uses of the tests and for the potential that the popular rankings have to distort educational practices (Gollub et al. 2002, 185ff.), Jay Mathews, the person behind the *Newsweek* rankings, views more widespread enrollment in such classes as a benefit (Mathews 1998). That is, the rankings may prompt changed school practices, but that would be a positive outcome.

5. The ranking approach is described by Morse (2007). Since the approach accounts for test scores and student demographics but not selectivity (by either school selection or student self-selection), choice schools and test-based schools are notably overrepresented. According to Rotherham, fully 20 percent of the schools on the list select students based on academic merit (Rotherham 2007). Schools located in wealthy, suburban areas also appear to do very well in the new ranking.

6. We recently have helped start up the Think Tank Review Project (at http://www.thinktankreview.org), which publishes reviews—comparable to peer reviews—addressing the quality of reports issued by think tanks (Welner and Molnar 2007).

7. Robert Fox (2005) has been pursuing an ambitious project whereby he hopes to put online, as a resource to accompany the annual CER report card, a comprehensive summary of each state's charter school law and a content analysis and comparison of

issues such as application procedures, renewal and revocation regulations, and collective bargaining requirements.

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F2-3: FLORIDA CHARTER SCHOOL APPLICATION EVALUATION INSTRUMENT

Florida Charter School Application Evaluation Instrument

Each section presents criteria for a response that meets the standard, and these criteria should guide the overall rating for the section. The "Strengths" and "Concerns and Additional Questions" boxes provide space to identify data and other evidence that supports the rating. The rationale for each rating is important, especially if some of the data or evidence does not fit neatly into the criteria provided. If the data or evidence provided for a section raises a concern or question related to a specific statutory requirement, please list the statute in the "Reference" box in order to provide the most constructive feedback.

The following definitions should guide the ratings:

Meets the Standard: The response reflects a thorough understanding of key issues and demonstrates capacity to open and operate a quality charter school. It addresses the topic with specific and accurate information that shows thorough preparation and presents a clear, realistic picture of how the school expects to operate.

Partially Meets the Standard: The response addresses most of the criteria, but the responses lack meaningful detail and require important additional information.

Does Not Meet the Standard: The response lacks meaningful detail; demonstrates lack of preparation; or otherwise raises substantial concerns about the applicant's understanding of the issue in concept and/or ability to meet the requirement in practice.

OVERALL ASSESSMENT – COMPLETE THIS SECTION LAST

Would you recommend approval of this application for a public charter school? Explain your recommendation in the Summary Comments section below.

DENY	APPROVE
☐	☐

SUMMARY COMMENTS

SAMPLE

I. Educational Plan

The education plan should define what students will achieve, how they will achieve it, and how the school will evaluate performance. It should provide a clear picture of what a student who attends the school will experience in terms of educational climate, structure, assessment and outcomes.

1. Mission, Guiding Principles and Purpose

The Mission, Guiding Principles and Purpose section should indicate what the school intends to do, for whom and to what degree.

Statutory References:
ss. 1002.33(2)(a), 1002.33(2)(b), 1002.33(2)(c), 1002.33(6)(a)1., 1002.33(7)(a)1., F.S.

Evaluation Criteria:
A response that meets the standard will present:

- A compelling mission statement that defines the purpose and values of the school.
- A set of priorities that are meaningful, manageable and measurable, and focused on improving student outcomes.

Meets the Standard	Partially Meets the Standard	Does Not Meet the Standard
☐	☐	☐

Strengths

Concerns and Additional Questions	Reference

2. Target Population and Student Body

The Target Population and Student Body section should describe the anticipated target population of the school and explain how the school will be organized by grade structure, class size and total student enrollment over the term of the school's charter.

Statutory References:
ss. 1002.33(10)(e), 1002.33(6)(b)2., 1002.33(7)(a)1., 1003.03, F.S.

Evaluation Criteria:
A response that meets the standard will present:

- An understanding of the students the charter school intends to serve.
- A manageable plan tied to enrollment projections that will allow the school to meet its constitutional class size obligations.

Meets the Standard	Partially Meets the Standard	Does Not Meet the Standard
☐	☐	☐

Strengths

Concerns and Additional Questions	Reference

3. <u>Educational Program Design</u>

The Educational Program Design section should describe the educational foundation of the school and the teaching and learning strategies that will be employed.

Statutory Reference:
s. 1002.33(7)(a)2., F.S.

Evaluation Criteria:
A response that meets the standard will present an educational program design that:

- Is clear and coherent;
- Is based on effective, research-based educational practices, teaching methods and high standards for student learning;
- Aligns with the school's mission and responds to the needs of the school's target population; and
- Presents evidence that the proposed approach will lead to improved student performance for the school's target population.

Meets the Standard	Partially Meets the Standard	Does Not Meet the Standard
☐	☐	☐

Strengths

Concerns and Additional Questions	Reference

4. <u>Curriculum Plan</u>

The Curriculum Plan section should explain not only *what* the school will teach but also *how* and *why*.

Statutory References:
ss. 1002.33(6)(a)2., 1002.33(6)(a)4., 1002.33(7)(a)2., 1002.33(7)(a)4., F.S.

A response that meets the standard will present a curriculum plan that:

- Provides a clear and coherent framework for teaching and learning;
- Is research-based;
- Is consistent with the school's mission, educational philosophy and instructional approach;
- Will enable students to attain Next Generation Sunshine State Standards and receive a year's worth of learning for each year enrolled; and
- Will be appropriate for all students at all levels.

Meets the Standard	Partially Meets the Standard	Does Not Meet the Standard
☐	☐	☐

Strengths

Concerns and Additional Questions	Reference

5. <u>Student Performance, Assessment and Evaluation</u>

The Student Performance, Assessment and Evaluation section should define what students attending the school should know and be able to do, and reflect how the academic progress of individual students, cohorts over time, and the school as a whole will be measured.

Statutory References:
ss. 1002.33(6)(a)3., 1002.33(7)(a)3., 1002.33(7)(a)4., 1002.33(7)(a)5., F.S.

Evaluation Criteria:
A response that meets the standard will present:

- Measurable educational goals and objectives that set high standards for student performance.
- Promotion and graduation standards that are based on high expectations and provide clear criteria for promotion from one level to the next, and for graduation.
- Evidence that a range of valid and reliable assessment instruments will be used to measure student performance.
- Assessment activities that are sufficiently frequent and a detailed plan to determine whether students are making adequate progress.
- Evidence that student performance data will be sued to evaluate the effectiveness of educational programs and influence adjustments when necessary.
- Plans for sharing student performance information that will keep students and parents well informed of academic progress.

Meets the Standard	Partially Meets the Standard	Does Not Meet the Standard
☐	☐	☐

Strengths

Concerns and Additional Questions	Reference

6. Exceptional Students

The Exceptional Students section should demonstrate an understanding of the requirements of the school to serve all students and provide a concrete plan for meeting the broad spectrum of educational needs and providing all students with a quality education.

Statutory References:
ss. 1002.33(10)(f), 1002.33(16)(a)3., F.S.

Evaluation Criteria:
A response that meets the standard will present:

- Demonstrated understanding of state and federal requirements regarding the education of exceptional students.
- Demonstrated commitment to serving the full range of needs of exceptional students.
- Sound plans for educating exceptional students that reflect the full range of programs and services required to provide all students with a high quality education.
- Demonstrated capacity to meet the school's obligations under state and federal law regarding the education of exceptional students.

Meets the Standard	Partially Meets the Standard	Does Not Meet the Standard
☐	☐	☐

Strengths

Concerns and Additional Questions	Reference

7. English Language Learners

The English Language Learners section should demonstrate an understanding of the requirements of the school to serve English Language Learners and provide a concrete plan for meeting the broad spectrum of educational needs and providing all students with a quality education.

Statutory Reference:
s. 1002.33(16)(a)3., F.S.

Evaluation Criteria:
A response that meets the standard will present:

- Demonstrated understanding of state and federal requirements regarding the education of English Language Learners.
- Demonstrated commitment to serving the full range of needs of English Language Learners.
- Sound plans for educating English Language Learners that reflect the full range of programs and services required to provide all students with a high quality education.
- Demonstrated capacity to meet the school's obligations under state and federal law regarding the education of English Language Learners.

Meets the Standard	Partially Meets the Standard	Does Not Meet the Standard
☐	☐	☐

Strengths

Concerns and Additional Questions	Reference

8. School Climate and Discipline

The School Climate and Discipline section should describe the learning environment of the school and provide evidence that the school will ensure a safe environment conducive to learning.

Statutory References:
ss. 1002.33(7)(a)7., 1002.33(7)(a)11., 1002.33(9)(n), F.S.

Evaluation Criteria:
A response that meets the standard will present:

- A school calendar and schedule that support the mission and program requirements and meet the minimum statutory requirements.
- An approach to student discipline that creates and sustains a safe and orderly learning environment.
- Legally sound policies for student discipline, suspension, dismissal and recommendation for expulsion.

Meets the Standard	Partially Meets the Standard	Does Not Meet the Standard
☐	☐	☐

Strengths

Concerns and Additional Questions	Reference

SAMPLE

II. Organizational Plan

The Organizational Plan should provide an understanding of how the school will be governed and managed. It should present a clear picture of the school's governance and management priorities, what responsibilities various groups and people will have, and how those groups will relate to one another.

9. Governance

The Governance section should describe how the policy-making and oversight function of the school will be structured and operate.

Statutory References:
ss. 1002.33(7)(a)15., 1002.33(12)(i), 1002.33(16)(b), F.S.

Evaluation Criteria:
A response that meets the standard will present:

- Documentation of proper legal structure of the governing board.
- Adequate policies and procedures for board operation.
- Evidence that the proposed governing board will contribute to the wide range of knowledge and skill needed to oversee a charter school.
- A clear, sensible delineation of roles and responsibilities in relation to governance and school management.
- A plan for the meaningful involvement of parents and the community in the governance of the school.

Meets the Standard	Partially Meets the Standard	Does Not Meet the Standard
☐	☐	☐

Strengths

Concerns and Additional Questions	Reference

10. Management

The Management section should describe how the day-to-day administration of the school's operations will be structured and fulfilled.

Statutory References:
ss. 1002.33(7)(a)9., 1002.33(7)(a)14., F.S.

SAMPLE

Evaluation Criteria:
A response that meets the standard will present:

- A management structure that includes clear delineation of the roles and responsibilities for administering the day-to-day activities of the school.
- A sound plan for the recruitment, selection and evaluation of the school leader.
- A viable and adequate staffing plan.
- A sound plan for recruiting and retaining qualified and capable staff.

Meet the Standard	Partially Meets the Standard	Does Not Meet the Standard
☐	☐	☐

Strengths

Concerns and Additional Questions	Reference

11. <u>Education Service Providers</u>
The term "education service provider" (ESP) refers to any number of organizations that contract with the governing board of a school to provide comprehensive services. The two major types of ESPs that serve charter schools are education management organizations and comprehensive school design providers. The Education Service Provider section should describe, if applicable, the contractual arrangement between the school's governing board and such a provider.

Statutory Reference:
s. 1002.33(7)(a)9., F.S.

Evaluation Criteria:
A response that meets the standard will present:

- A persuasive explanation of the reasons for contracting with an education service provider.
- A persuasive explanation that the proposed relationship with the ESP will further the school's mission and program.
- A clear description of the services to be provided by the ESP.
- A clear delineation of the roles and responsibilities between the school's governing board and the ESP.
- A clearly defined performance-based relationship between the school's governing board and the ESP.

Not Applicable	Meets the Standard	Partially Meets the Standard	Does Not Meet the Standard
☐	☐	☐	☐

Strengths

Concerns and Additional Questions	Reference

12. Employment

The Employment section should define the policies and procedures that frame the school's relationship with its staff.

Statutory References:
ss. 1002.33(7)(a)14., 1002.33(12), F.S.

Evaluation Criteria:
A response that meets the standard will present:

- A compensation plan that will attract and retain quality staff.
- Policies and procedures that hold staff to high professional standards.

Meets the Standard	Partially Meets the Standard	Does Not Meet the Standard
☐	☐	☐

Strengths

Concerns and Additional Questions	Reference

13. Parent and Community Support and Partnerships

The Parent and Community Support and Partnerships section should describe how parents and the community will be engaged in the operations of the school.

Evaluation Criteria:
A response that meets the standard will present:

- Meaningful partnerships with parents and the community that further the school's mission and programs.

Meets the Standard	Partially Meets the Standard	Does Not Meet the Standard
☐	☐	☐

Strengths

Concerns and Additional Questions	Reference

14. <u>Student Recruitment and Enrollment</u>

The Student Recruitment and Enrollment section should describe how the school will attract and enroll its student body.

Statutory References:
ss. 1002.33(7)(a)7., 1002.33.(7)(a)8., 1002.33(10), F.S.

Evaluation Criteria:
A response that meets the standard will present:

- A student recruitment plan that will enable the school to attract its targeted population.
- An enrollment and admissions process that is open, fair, and in accordance with applicable law.

Meets the Standard	Partially Meets the Standard	Does Not Meet the Standard
☐	☐	☐

Strengths

Concerns and Additional Questions	Reference

III. Business Plan

The Business Plan should provide an understanding of how the charter operators intend to manage the school's finances. It should present a clear picture of the school's financial viability including the soundness of revenue projections; expenditure requirements; and how well the school's budget aligns with and supports effective implementation of the educational program.

15. Facilities

The Facilities section should provide an understanding of the school's anticipated facilities needs and how the school plans to meet those needs.

Statutory References:
ss. 1002.33(7)(a)13., 1002.33(18), F.S.

Evaluation Criteria:
A response that meets the standard will present:

- A realistic plan for securing a facility that is appropriate and adequate for the school's program and targeted population.
- Evidence that the school has access to the necessary resources to fund the facilities plan.

Meets the Standard	Partially Meets the Standard	Does Not Meet the Standard
☐	☐	☐

Strengths

Concerns and Additional Questions	Reference

16. Transportation Service

The Transportation Service section should describe how the school will address this service for its student body.

Statutory Reference:
s. 1002.33(20)(c), F.S.

Evaluation Criteria:
A response that meets the standard will present:

- A transportation plan that will serve all eligible students.

Meets the Standard	Partially Meets the Standard	Does Not Meet the Standard
☐	☐	☐

Strengths

Concerns and Additional Questions	Reference

17. Food Service

The Food Service section should describe how the school will address this service for its student body.

Statutory Reference:
s. 1002.33(20)(a), F.S.

Evaluation Criteria:
A response that meets the standard will present:

- A food service plan that will serve all eligible students.

Meets the Standard	Partially Meets the Standard	Does Not Meet the Standard
☐	☐	☐

Strengths

Concerns and Additional Questions	Reference

18. Budget

The Budget section should provide financial projections for the school over the term of its charter.

Statutory References:
ss. 1002.33(6)(a)5., 1002.33(6)(b)2., F.S.

Evaluation Criteria:
A response that meets the standard will present:

- Budgetary projections which are consistent with all parts of the application, including the school's mission, educational program, staffing plan and facility.
- A realistic assessment of the projected sources of revenue and expenses that ensure the financial viability of the school, including a realistic FTE projection.

Meets the Standard	Partially Meets the Standard	Does Not Meet the Standard
☐	☐	☐

Strengths

Concerns and Additional Questions	Reference

19. Financial Management and Oversight

The Financial Management and Oversight section should describe how the school's finances will be managed and who will be responsible for the protection of student and financial records.

Statutory References:
ss. 1002.33(6)(a)5., 1002.33(7)(a)9., 1002.33(7)(a)11., F.S.

Evaluation Criteria:
A response that meets the standard will present:

- A fiscal management system that is appropriate, follows generally accepted accounting principles and properly safeguards assets.
- Evidence of proper insurance coverage.

Meets the Standard	Partially Meets the Standard	Does Not Meet the Standard
☐	☐	☐

Strengths

Concerns and Additional Questions	Reference

20. Action Plan

The Action Plan should provide a clear roadmap of the steps and strategies that will be employed to prepare the school to be ready to serve its students well on the first day of operation.

Statutory Reference:
s. 1002.33(7)(a)(16), F.S.

Evaluation Criteria:
A response that meets the standard will present an action plan that:

- Provides a thoughtful and realistic implementation plan that covers major operational items and provides flexibility for addressing unanticipated events.

Meets the Standard	Partially Meets the Standard	Does Not Meet the Standard
☐	☐	☐

Strengths	Reference

Concerns and Additional Questions	Reference

F2-4: CHARTER SCHOOL CLOSURES

DISTRICTNAME	SCHOOLNAME	DATE_CLOSED	Reason for Closure
ALACHUA	OASIS ENRICHMENT ACADEMY	11/1/2006	Financial Emergency
ALACHUA	MARTIN LUTHER KING ACADEMY	6/30/2007	Combined with another charter school
ALACHUA	DESOTO HIGH SCHOOL, INC.	6/30/2008	School chose not renew charter
ALACHUA	LOVE TO LEARN EDUCATIONAL CENTER	8/11/2008	School chose to close
BAY	TAPESTRY PARK CHARTER SCHOOL	10/11/2005	financial
BRADFORD	BELIEVER'S SCHOOL OF LEARNING	6/30/2007	Financial difficulty
BREVARD	RIVERS CHARTER ACADEMY	6/30/2005	Changed name to River's Edge Charter Academy in 2004 and then River's Edge changed its name to Imagine Schools at West Melbourne on 06/17/2008. Thomas Cole is the current principal of Imagine Schools at West Melbourne. Imagine Schools at West Melbourne is located at 3355 Imagine Way, West Melbourne, FL 32904 and their telephone number is 321-768-6200
BREVARD	STEPPING STONES CHARTER SCHOOL	6/30/2005	Changed name to River's Edge Charter Academy in 2004 (same info as above)
BREVARD	EXPLORER ELEMENTARY/MIDDLE CHARTER	4/10/2007	Financial - 2007 School Imploded
BREVARD	EINSTEIN MONTESSORI	6/30/2007	Chose not to renew their contract which ended 06/30/2007 - Einstein went Private
BREVARD	OAKWOOD ACADEMY	6/30/2007	Merged with Royal Palm 07/17/2007
BREVARD	OSPREY ELEMENTARY SCHOOL	8/28/2007	Financial - Contract terminated 08/29/2007
BREVARD	SAWGRASS ACADEMY	8/28/2007	Financial - Contract terminated 08/29/2007
BROWARD	N. LAUDERDALE ACADEMY HIGH SCHOOL	6/30/2005	Reconstituted because 2 Fs
BROWARD	NORTH LAUDERDALE ACADEMY HIGH SCHOOL	6/30/2006	financial - governing board action
BROWARD	EARLY BEGINNINGS ACADEMY WEST	6/30/2007	Low enrollment - governing board action
BROWARD	SMART SCHOOL INSTITUTE OF TECH/COM	6/30/2007	Reconstituted because 2 Fs
BROWARD SUNSHINE	ACADEMY CHARTER	6/30/2007	financial - governing board action
BROWARD	SMART SCHOOL INSTITUTE OF TECHNOLOGY AND COMMERCE	9/8/2008 academic	performance - school board action
BROWARD	DOWNTOWN ACADEMY OF TECHNOLOGY & ARTS	9/19/2008	financial - governing board action
BROWARD	SUNRISE COMMUNITY CHARTER	2/3/2009	Threat to health, safety and welfare of students, etc.
BROWARD	SUSIE DANIEL CHARTER SCHOOL	7/21/2009	School Board Action
BROWARD	DAYSPRINGS ELEMENTARY	6/4/2009	Governing Board Action
DADE	A CHILD'S JOURNEY CHARTER SCHOOL	7/21/2008	Facility Issues - Lease terminated/academic performance
DADE	COOPERATIVE CHARTER SCHOOL	7/21/2008	Academic performance
DADE	EARLY BEGINNINGS ACADEMY-NORTH SHORE	6/30/2007	Merger/consolication into one charter - Early Beginnings Civic Center
DADE	EXCEL ACADEMY CHARTER SCHOOL	6/4/2009	Financial & Academic Performance

F2-4: CHARTER SCHOOL CLOSURES

DADE	EXCEL ACADEMY MIDDLE CHARTER SCHOOL	6/4/2009	Financial & Academic Performance
DADE	LIBERTY CITY CHARTER SCHOOL	7/21/2008	Severe Financial Emergency/inadequate insurance coverage/eviction
DADE	LIFE SKILLS CENTER-LIBERTY CITY AREA	2/3/2009	Facilities - Lease termination
DADE	NORTH COUNTY CHARTER SCHOOL	6/6/2005	SURRENDERED CHARTER
DADE	NORTH DADE COMMUNITY CHARTER	1/31/2005	SURRENDERED CHARTER
DADE	NORTHEAST ACADEMY	6/30/2005	SURRENDERED CHARTER
DADE	ROSA PARKS CHARTER SCHOOL	7/21/2008	Academic Performance
DADE	ROSA PARKS COMMUNITY - OVERTOWN	6/30/2005	Withdrew request for renewal
DADE	SPIRAL TECH ELEMENTARY CHARTER SCH	6/30/2006	90 DAY TERMINATION, financial
DADE	SPIRIT CITY ACADEMY	12/15/2008	IMMEDIATE TERMINATION, PRIOR TO END OF SCHOOL YEAR, academic & financial performance
DADE	SUNSHINE ACADEMY	6/30/2007	SURRENDERED CHARTER/Academic & Financial Performance/Management and Governance
DADE TRANSITI	ONAL LEARNING ACADEMY	6/30/2007	SURRENDERED CHARTER/No longer feasible to maintain separate charter
DADE	TREE OF KNOWLEDGE ACADEMY	7/31/2009	SURRENDERED CHARTER/Financial Performance/Management/FTE Issues (Audit revealed overpayment)
DADE	VANKARA ACADEMY CHARTER SCHOOL	6/30/2005	NON-RENEWAL
DADE TECHWORLD	CHARTER SCHOOL	1/31/2001	TERMINATION, financial/academic management
DADE	BRIDGE ACADEMY	5/1/2005	REVOCATION PRIOR TO OPENING, non disclosure of background information
DUVAL	DESTINY EDUCATIONAL ACADEMY	7/8/2004	Academics
DUVAL	DANIEL PAYNE ACADEMY CHARTER	6/30/2005	Academics
DUVAL HORI	ZONS UNLIMITED	6/30/2005	Academics
DUVAL	SCHOOL OF SUCCESS ACADEMY CHARTER HIGH SCHOOL	6/30/2006 Academics	
DUVAL	SOJOURNER TRUTH HIGH SCHOOL	6/30/2006	Academics/Financial
DUVAL	KREATIVE KIDS CHARTER	6/30/2004	Two failing grades & financial problems
ESCAMBIA	LIFE SKILLS CENTER	6/30/2008	Management company terminated contract with the school's governing body
ESCAMBIA	RUBY J. GAINER CHARTER SCHOOL	5/29/2009	Financial
HIGHLANDS HOPEWELL	ACADEMY	4/7/2008	Financial

F2-4: CHARTER SCHOOL CLOSURES

HILLSBOROUGH	EASTSIDE MULTICULTURAL CHARTER SCHOOL	6/30/2004	student achievement
HILLSBOROUGH	CENTRAL CITY ELEMENTARY OF TAMPA	6/30/2005	student achievement
HILLSBOROUGH	NORTH TAMPA ALTERNATIVE CHARTER SCHOOL	6/30/2005	school chose to close due to financial matters
HILLSBOROUGH	TAMPA UNITED METHODIST	6/30/2005	student achievement
HILLSBOROUGH	WILBESAN ACADEMY	6/30/2005	student health and safety
HILLSBOROUGH	RICHARD MILBURN ACADEMY	6/30/2006	student achievement, FTE inaccuracies leading to financial concerns
HILLSBOROUGH	PRINCE ACADEMY	6/30/2008	academics, financial, board governance,student health/safety
HILLSBOROUGH	USF/PATEL INTERMEDIATE CHARTER SCHOOL	6/30/2008	student achievement
HILLSBOROUGH	USF/PATEL PRIMARY CHARTER SCHOOL	6/30/2008	student achievement
HILLSBOROUGH	METROPOLITAN MINISTRIES	6/9/2009	School requested termination due to poor student achievement
HILLSBOROUGH	CARL SAGAN ACADEMY	7/14/2009	school requested non-renewal due to poor student achievement & ESE issues
HILLSBOROUGH	ANDERSON ACADEMY	7/14/2009	School requested termination due to poor student achievement, ESE issues, and financial issues
HILLSBOROUGH	REBIRTH ACADEMY	7/28/2009	school board voted to non-renew contract due to poor student achievement
HILLSBOROUGH	TAYLOR PEACE ACADEMY	7/28/2009	school board voted to non-renew contract due to fiscal mismanagement, never opened
INDIAN RIVER	INDIAN RIVER ACADEMY	12/22/2005	Financial and enrollment
JACKSON	CHALLENGE FOR SUCCESS	6/30/2005	cheating on FCAT, did not pay bills to vendors, contract was not renewed
LAKE	MILESTONES COMMUNITY MIDDLE	6/30/2005	Merged
LAKE	MILESTONES COMMUNITY SCHOOL	6/30/2005	Merged
LAKE	RIVENDELL ACADEMY	8/4/2008	no longer had a management company and requested a termination of their charter contract
LAKE	NATIONAL DEAF ACADEMY	7/1/2009	opted to become a private school and not renew their charter
LEE	BRIGHT SCHOLARS ACADEMY	12/9/2008	financial failure
LEVY	NEW HOPE CHARTER SCHOOL	5/26/2006	financial
MANATEE	ISLAND MIDDLE SCHOOL, INC.	6/30/2005	overturn in leadership
MANATEE	MANATEE CO. JUVENILE JUSTICE	6/30/2006	moved the program
MANATEE	PAL OPPORTUNITY CHARTER SCHOOL	6/30/2009	School chose not renew charter
MARION	FUTURE LEADERS ACADEMY FOR ARTS AND SCIENCE	6/30/2005	Financial and academic

ORANGE	KOTA CHARTER SCHOOL	never opened	Never opened. Application approved but never went to contract
ORANGE	MESTA CHARTER	2/1/2004	Good Cause
ORANGE	ORIGINS MONTESSORI CHARTER	6/30/2007	Contract non-renewed due to lack of financial oversight
ORANGE	SUMMIT CHARTER WEST	6/30/2007	Contract non-renewed at request of charter school
ORANGE	SUMMIT CHARTER CENTRAL	6/30/2008	Non-renewed at request of charter school
ORANGE	WESTMINSTER ACADEMY CHARTER	6/30/2008	closed at request of charter school
OSCEOLA	ARTHUR J. GALLAGHER NEIGHBORHOOD SCHOOL, INC.	6/30/2006	The Charter School Board of Directors cancelled their contract with the School Board of Osceola County
OSCEOLA	CANOE CREEK MIDDLE ACEDEMY	6/30/2006	Canoe Creek Middle Academy merged with Canoe Creek Charter Academy for the 2006-2007 school year, serving K-8 students
OSCEOLA	FOUNDATION MIDDLE ACADEMY	6/30/2006	Foundation Middle Academy merged with P.M. Wells Charter Academy for the 2006-2007 school year, serving K-8 students
OSCEOLA	FOUR CORNERS CHARTER MIDDLE	6/30/2006	Four Corners Charter Middle merged with Four Corners Charter School for the 2006-2007 school year, serving K-8 students
OSCEOLA	KENANSVILLE CHARTER ELEMENTARY	10/31/2006	Charter School requested to close the school based upon specific facility safety issues.
OSCEOLA	KENANSVILLE CHARTER MIDDLE SCHOOL	10/31/2006	Charter School requested to close the school based upon specific facility safety issues.
PALM BEACH	ACADEMIC SCHOOL FOR THE ARTS	6/30/2005	School requested closure due to financial difficulties
PALM BEACH	TERRANOVA CHARTER SCHOOL	6/30/2005	School requested closure due to financial difficulties
PALM BEACH	SPANISH ACADEMY CHARTER SCHOOL	1/1/2006	School requested closure due to financial difficulties
PALM BEACH	COREBRIDGE EDUCATIONAL ACADEMY	6/30/2006	School requested closure due to financial difficulties
PALM BEACH	DELRAY BOYNTON ACADEMY	6/30/2006	School was turned over to an Alternative School
PALM BEACH	RIVIERA BEACH CHARTER SCHOOL	6/30/2006	School was turned over to an Alternative School
PALM BEACH	PALM BEACH MILITARY ACADEMY	10/24/2006	School requested closure due to lack of teachers
PALM BEACH	GOOD SCHOOLS FOR ALL LEADERSHIP ACADEMY	6/30/2007	The governing board requested closure
PALM BEACH	GULF STREAM GOODWILL CAREER ACADEMY	6/30/2007	School requested closure to focus on ESE Programs for the other two (2) charter schools they have
PALM BEACH	MONTESSORI ACADEMY OF NORTHERN PALM BEACH	6/30/2007	School requested closure due to financial difficulties
PALM BEACH	THE IMAGINE SCHOOL	6/30/2007	School requested withdrawl of the renewal application
PALM BEACH	ACADEMY OF INTERNATIONAL STUDIES	7/1/2008	School merged with Bright Futures International

F2-4: CHARTER SCHOOL CLOSURES

PALM BEACH	GULFSTREAM TRANSITION ACADEMY	9/17/2008	School merged with Gulfstream Goodwill L.I.F.E.
PASCO	INFINITY SCHOOL OF PERFORMING ARTS	never opened	School did not open.
PASCO	THE LANGUAGE ACADEMY	6/29/2007	Financial - EMO closed school just prior to district renewal decision not to renew.
PASCO	RICHARD MILBURN ACADEMY	6/30/2007	Financial due to low enrollment
POLK	ACADEMIC REASEARCH CENTER (ARC)	6/30/2005	Academic- State Board of Education Ruling
POLK	THE OAKS MIDDLE ACADEMY	6/30/2005	Other reasons- Governing Board decision
POLK	ARC - ACADEMIC RESEARCH CENTER	8/1/2005	Academic- State Board of Education Ruling
POLK	BARTOW CHARTER SCHOOL	8/1/2005	Academic- State Board of Education Ruling
POLK	HAINES CITY LITERARCY LEARNING ACADEMY	5/4/2006	Other reasons- Governing Board decision
POLK	THE APPLE SCHOOL	5/23/2006	Other reasons- Governing Board decision
POLK BENNETT	CHRISTIANSEN ACADEMY	6/30/2006	Other reasons- Governing Board decision
POLK	S.T.A.R. CHARTER SCHOOL	5/22/2007	Other reasons- Non-Renewasl of Charter Contract with Sponsor
POLK FOU	NDATION SCHOOL	6/30/2009	Other reasons- Governing Board decision
POLK	LIFE SKILLS CENTER	6/30/2009	Other reasons- Non-Renewasl of Charter Contract with Sponsor
SARASOTA	WINGS ACADEMY	6/30/2005	Never opened
SARASOTA	CHANCELLOR CHARTER SCHOOL AT SARASOTA	6/30/2006	Financial
SARASOTA	RICHARD MILBURN ACADEMY OF FLORIDA	6/30/2006	Academic
SARASOTA	SARASOTA COMMUNITY SCHOOL FOR EXCELLENCE	never opened	Never opened
SARASOTA	GOODWILL ACADEMY	6/30/2008	Academic, financial
ST. JOHNS	FIRST COAST SKILLS ACADEMY	8/30/2004	closed voluntarily
ST. JOHNS	FIRST COAST TECHNICAL HIGH SCHOOL	8/30/2004	closed voluntarily
ST. JOHNS	LOVE TO LEARN ACADEMY	6/30/2005	closed by district
SUMTER	THE VILLAGES CHARTER HIGH	6/30/2007	Merged with 2001
SUMTER	VILLAGES CHARTER MIDDLE SCHOOL	6/30/2007	Merged with 2001
VOLUSIA	EASTER SEALS CHILD DEVELOPMENT CENTER-DELTONA	6/30/2006	Lack of affordable space
VOLUSIA	EASTER SEALS CHILD DEVELOPMENT CENTER, DELAND	6/30/2009	Easter Seals has one contract with 2 sites. This is not the main site

F2-5: 2008-2009 CHARTER SCHOOL STUDENT ACHIEVEMENT REPORT-DATA

Student Achievement in Florida's Charter Schools:

A Comparison with Achievement in Traditional Public Schools

(b)(6)

FLORIDA DEPARTMENT OF EDUCATION

Improving K-12 Educational Choice Options

About This Report

Section 1002.33(23), Florida Statutes, requires the Florida Department of Education to prepare an annual statewide analysis of student achievement in charter schools versus the achievement of comparable students in traditional public schools. This report of charter school student performance fulfills the statutory requirement for the 2008-09 school year. The analysis examines the average performance of charter school students and traditional public school students using eight years of Florida Comprehensive Assessment Test (FCAT) reading and math test scores, as well as the FCAT science test scores that were added to the school grading calculation in 2007-08. Only students who were enrolled in a charter school or a traditional public school for an entire school year are included in the analysis. Limiting the analysis to include only full-year students is consistent with the state's school accountability system for awarding school grades under the A+ Plan. In addition, the report compares charter and traditional public schools in terms of achievement gaps and student learning gains.

The analysis and production of this report was a coordinated effort between the Office of Independent Education and Parental Choice and the Bureau of Research and Evaluation in the Division of Accountability, Research, and Measurement. Additional information about charter schools and other school choice options is available on the Department's Web site at: www.floridaschoolchoice.org.

> **Section 1002.33(23)**, *Florida Statutes (23) ANALYSIS OF CHARTER SCHOOL PERFORMANCE.--Upon receipt of the annual report required by paragraph (9)(l), the Department of Education shall provide to the State Board of Education, the Commissioner of Education, the Governor, the President of the Senate, and the Speaker of the House of Representatives an analysis and comparison of the overall performance of charter school students, to include all students whose scores are counted as part of the statewide assessment program, versus comparable public school students in the district as determined by the statewide assessment program currently administered in the school district, and other assessments administered pursuant to s. 1008.22(3).*

FLORIDA'S
CHARTER
Schools

Table of Contents

(b)(6)

Student Achievement in Florida's Charter Schools: A Comparison with Achievement in Traditional Public Schools

Charter schools are independent public schools created on the basis of an agreement between a group of school organizers and a sponsoring body. Florida's charter schools have been growing by near record numbers since the first five charter schools were opened in 1996. During the 2008-09 school year, 389 operated throughout the state in 42 school districts and at two state universities. While each charter school is unique in its educational approach, charter schools are generally classified as start-up schools, schools managed by educational management organizations, conversion public schools, community partnerships, or University charter lab schools. Each charter school has its own governing board that is responsible for setting policies and procedures. Charter schools have flexibility in providing expanded learning experiences to meet students' individual educational needs by using innovative learning methods. In return, they are held accountable for achieving results. Although provided more freedom than traditional public schools, charter schools are held accountable on multiple levels. The charter contract delineates expectations of the governing board and the sponsor regarding the school's academic and financial performance. As part of their contract, charter schools are held accountable for academic and financial results, embodied in the following three guiding principles:

- Meet high standards of student achievement while providing parents flexibility to choose among diverse educational opportunities within the state's public school system;
- Promote enhanced academic success and financial efficiency by aligning responsibility with accountability; and
- Provide parents with sufficient information on whether or not the child gains at least a year's worth of learning for every year spent in the charter school.

Students Served by Florida Charter Schools

Charter schools provide parents with additional choices for selecting the most effective educational programs for their children and offer creative solutions for improving student achievement in Florida. The charter school movement in Florida began as an avenue to improve student learning, increase parental choice, influence the traditional public school system, and foster innovative instructional practices. Charter school enrollment has grown steadily over the last decade. As shown below, charter schools served 118,000 students in the 2008-09 school year, which translates to more than 4.5% of Florida's total public school population. Of these students, males and females each made up 50% of the population. Approximately 59% of charter school students were minorities compared to 54% of traditional public school students. Charter schools had a lower percentage of students who qualified for free and reduced price lunch. In addition, charter schools served a smaller proportion of students with disabilities than traditional public schools.

2008-09 Charter School and Traditional School Student Populations

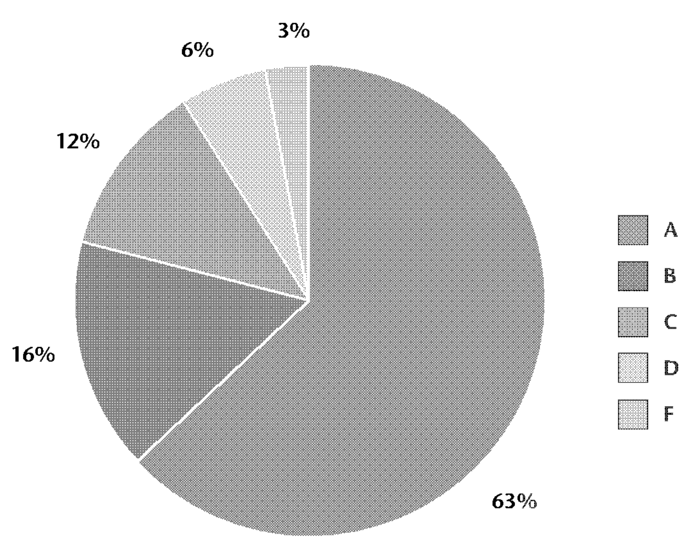
	Charter	Traditional
Student Membership	118,058	2,552,937
Gender		
Male	50%	48%
Female	50%	52%
Race		
White	41%	46%
African American	22%	23%
Hispanic	31%	25%
Asian	2%	2%
American Indian	0.4%	0.3%
Multi-Racial	4%	4%
Free and Reduced Lunch Eligible	38%	49%
Exceptional Student Education	10.8%	14.2%

Grading Charter Schools

Like traditional public schools, charter schools are assigned a performance grade if they meet the eligibility criteria and are not an alternative school. Changes to the school grade calculations in 2002-03 resulted in an increased number of charter schools receiving performance grades. The percentage of charter schools receiving an "A" has increased from 42% in 2002-03 to 63% in 2008-09. Conversely, the percentage of "F" charter schools has decreased to 3% in 2008-09 from 16% in 2002-03.

YEAR	A	B	C	D	F
2002-03	42%	11%	18%	13%	16%
2003-04	38%	11%	24%	13%	14%
2004-05	36%	15%	22%	14%	12%
2005-06	50%	20%	21%	6%	3%
2006-07	48%	21%	19%	8%	5%
2007-08	52%	20%	19%	4%	5%
2008-09	63%	16%	12%	6%	3%

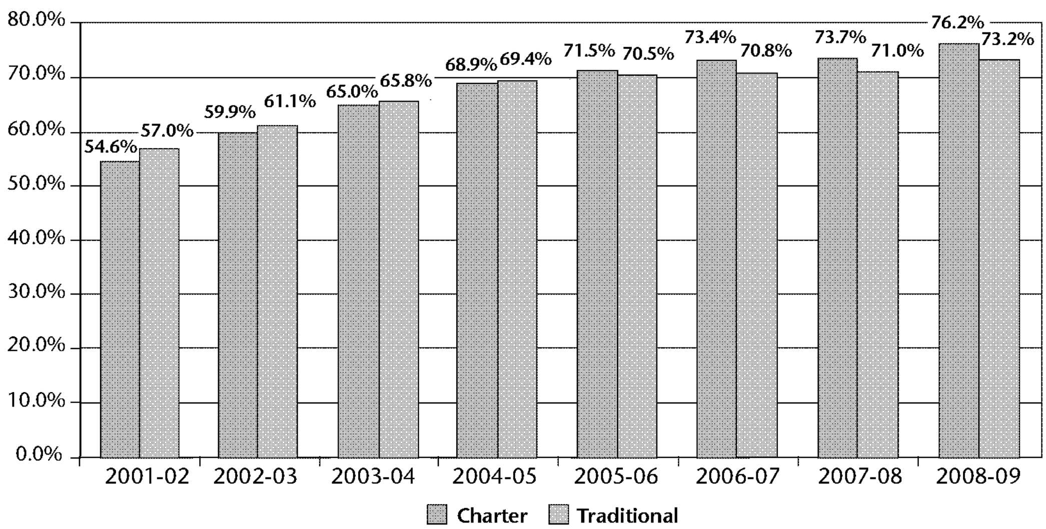
2009 Charter School Performance Grades



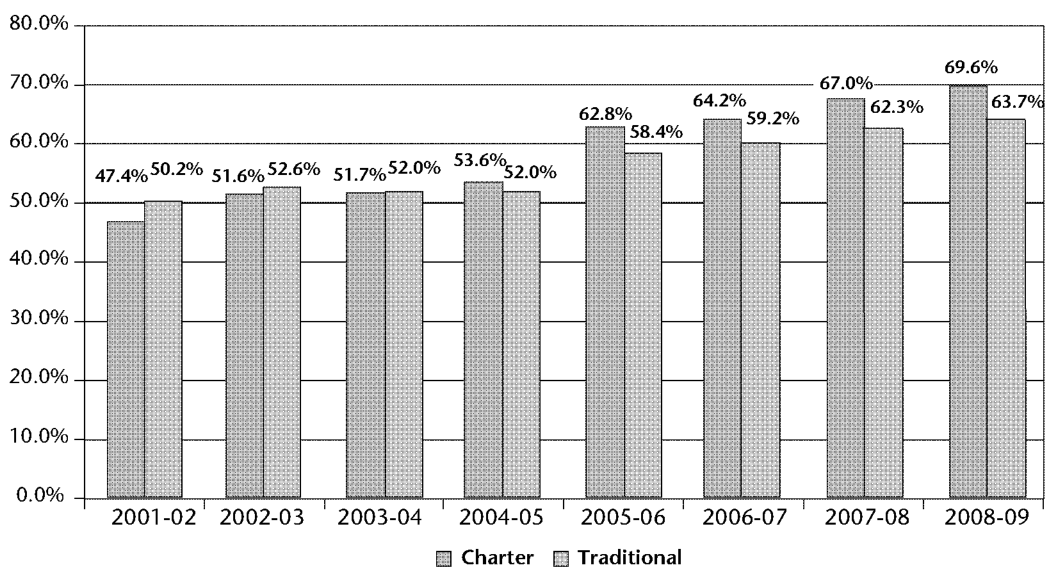
Reading

FCAT Reading Traditional Public Schools and Charter Schools 2002-2009

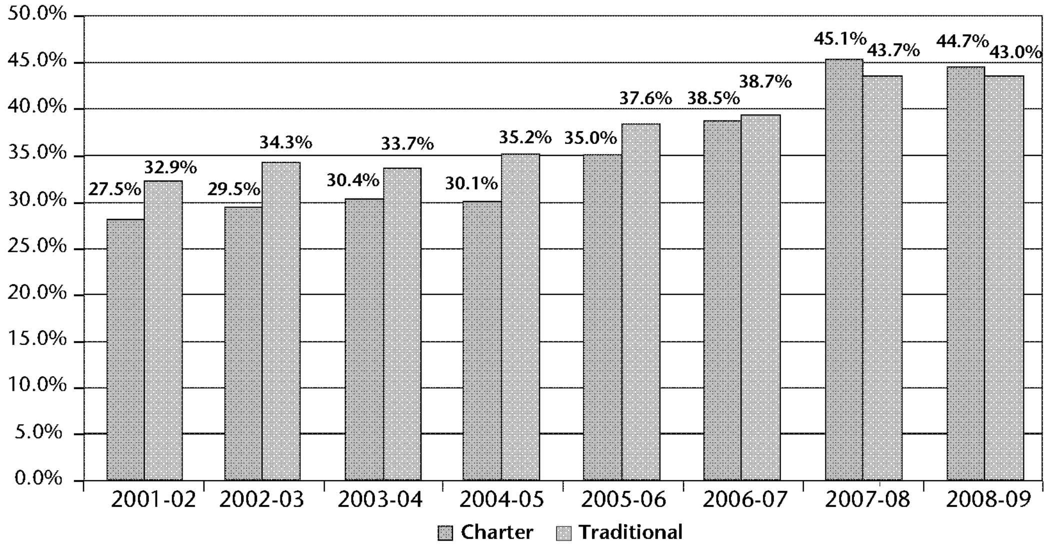
**Percent of Students Scoring at Level 3 or Above on FCAT Reading
Elementary School Grades 3, 4, and 5
Charter Schools and Traditional Public Schools, 2002 to 2009**



**Percent of Students Scoring at Level 3 or Above on FCAT Reading
Middle School Grades 6, 7, and 8
Charter Schools and Traditional Public Schools, 2002 to 2009**



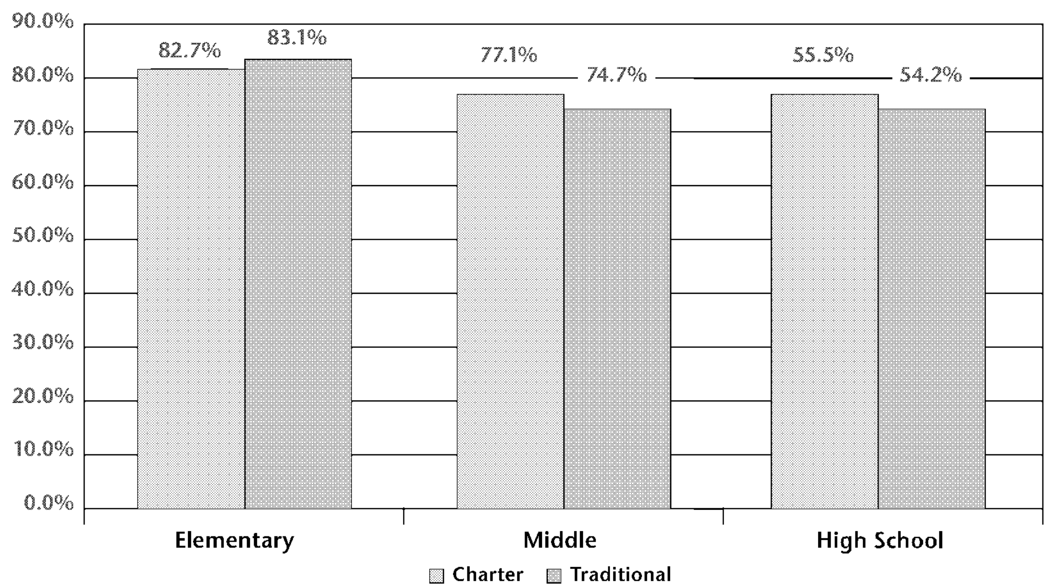
Percent of Students Scoring at Level 3 or Above on FCAT Reading
High School Grades 9 and 10
Charter Schools and Traditional Public Schools, 2002 to 2009



Reading

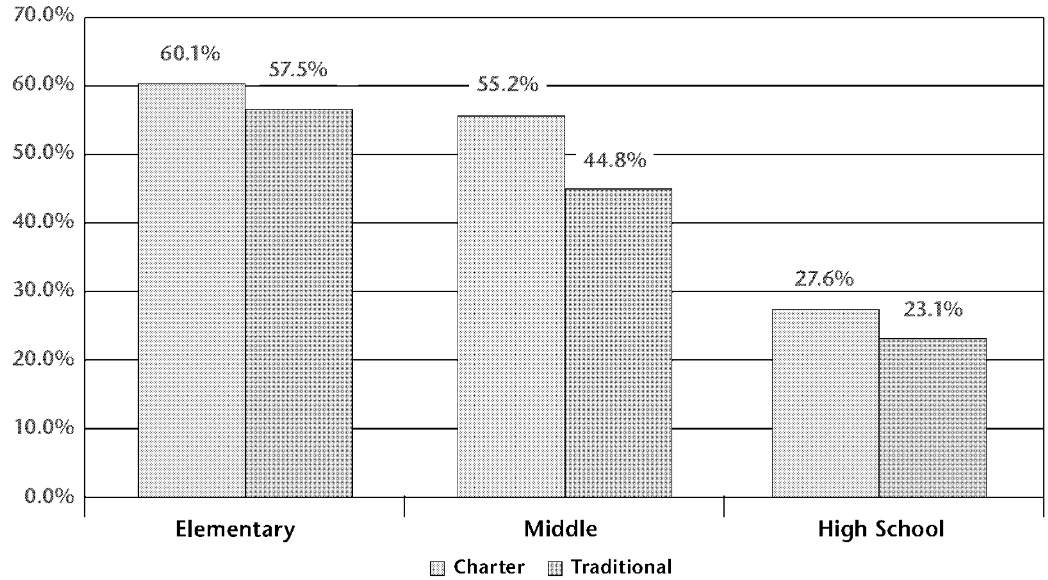
FCAT Reading
Traditional Public Schools and Charter Schools
SUB-GROUP COMPARISONS 2009

Percent of Students Scoring a Level 3 or Above on FCAT Reading
Charter Schools and Traditional Public Schools
White Students

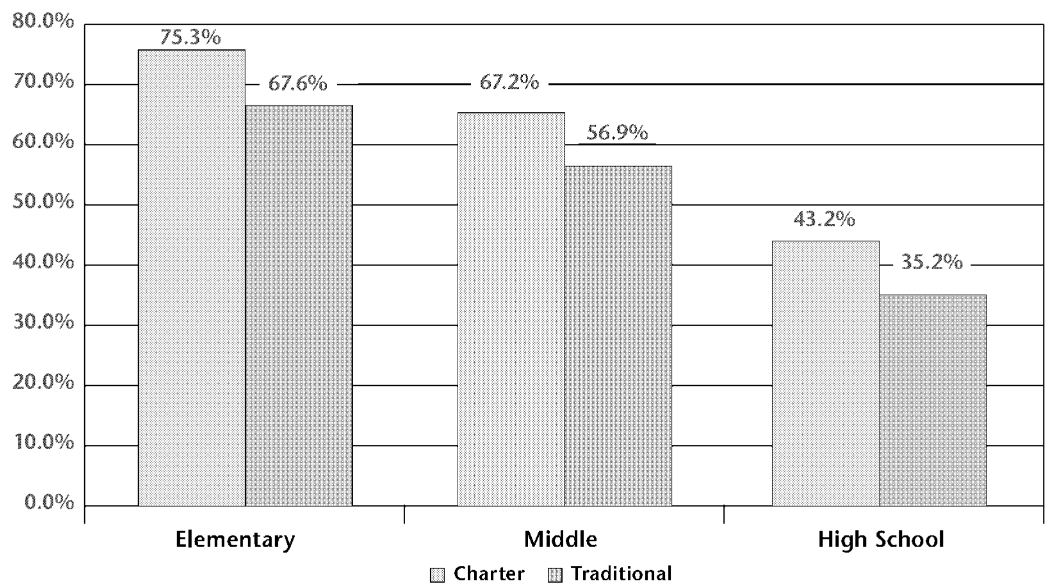


Reading

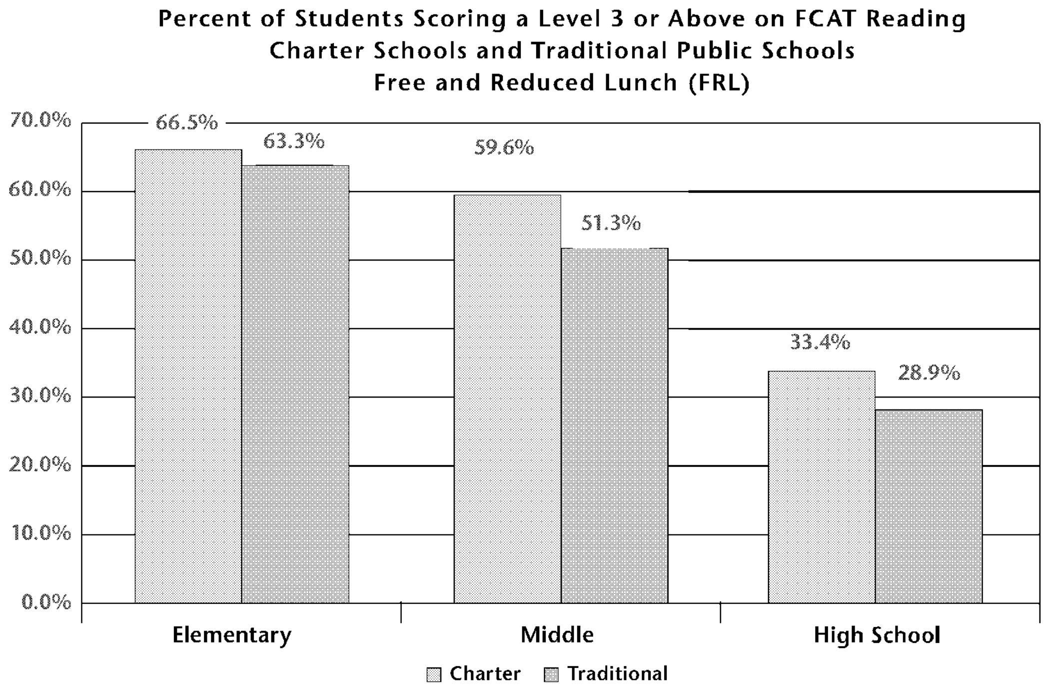
Percent of Students Scoring a Level 3 or Above on FCAT Reading
Charter Schools and Traditional Public Schools
African-American Students

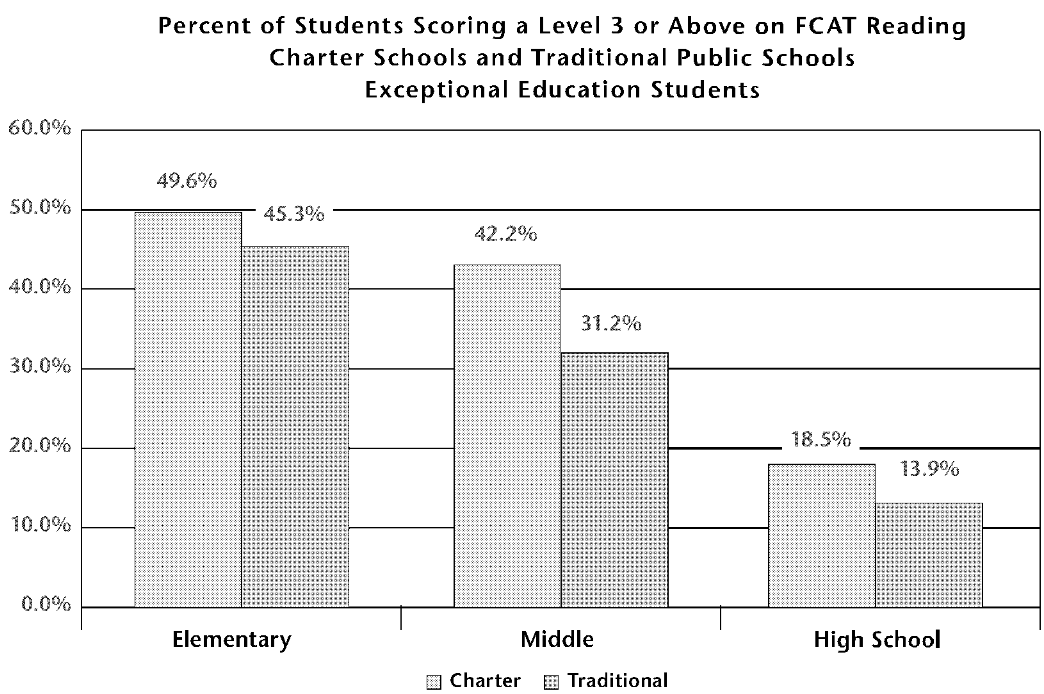


Percent of Students Scoring a Level 3 or Above on FCAT Reading
Charter Schools and Traditional Public Schools
Hispanic Students



Reading

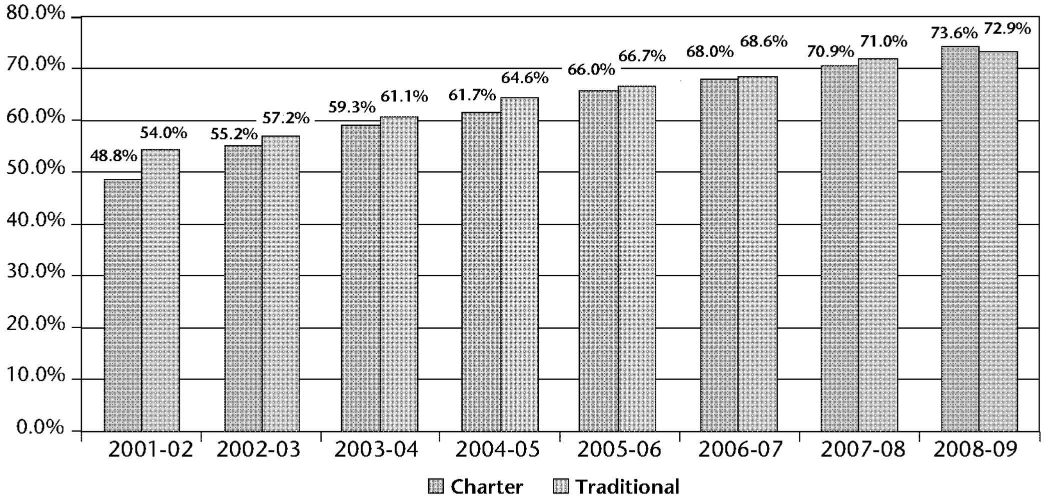

Percent of Students Scoring a Level 3 or Above on FCAT Reading
Charter Schools and Traditional Public Schools
Free and Reduced Lunch (FRL)
70.0%
60.0%
50.0%
40.0%
30.0%
20.0%
10.0%
0.0%
66.5%
63.3%
59.6%
51.3%
33.4%
28.9%
Elementary
Middle
High School
Charter
Traditional


Percent of Students Scoring a Level 3 or Above on FCAT Reading
Charter Schools and Traditional Public Schools
Exceptional Education Students
60.0%
50.0%
40.0%
30.0%
20.0%
10.0%
0.0%
49.6%
45.3%
42.2%
31.2%
18.5%
13.9%
Elementary
Middle
High School
Charter
Traditional

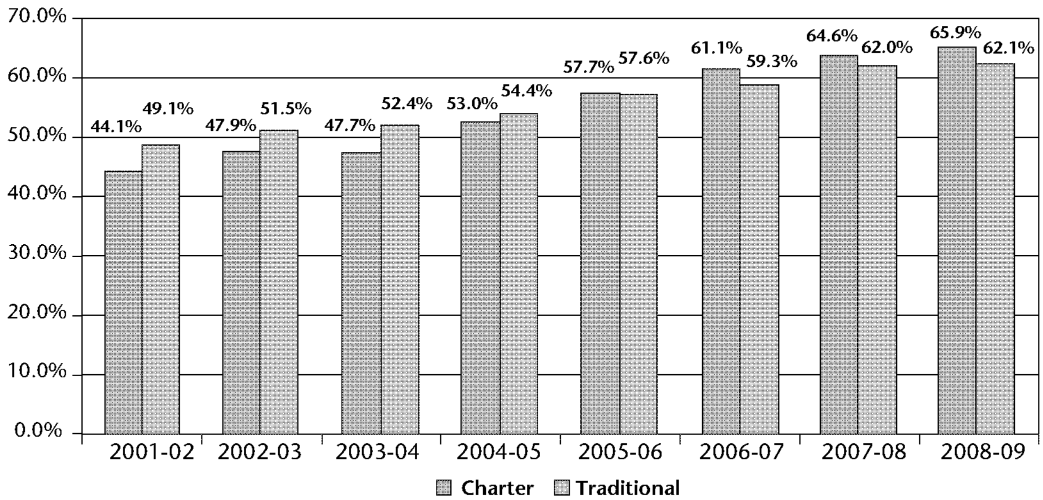
Math

FCAT Math
Traditional Public Schools and Charter Schools
2002-2009

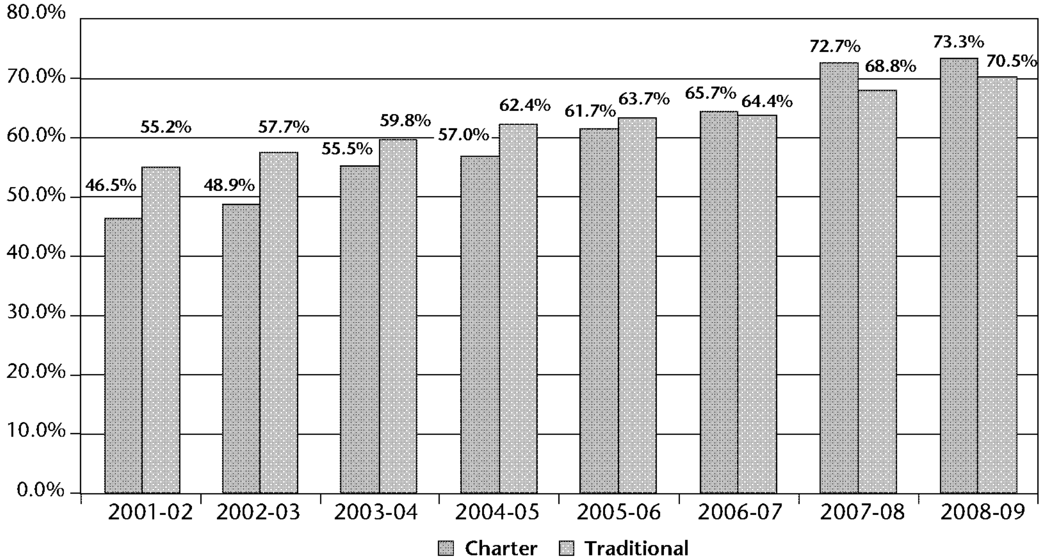
Percent of Students Scoring at Level 3 or Above on FCAT Math
Elementary School Grades 3, 4, and 5
Charter Schools and Traditional Public Schools, 2002 to 2009



Percent of Students Scoring at Level 3 or Above on FCAT Math
Middle School Grades 6, 7, and 8
Charter Schools and Traditional Public Schools, 2002 to 2009



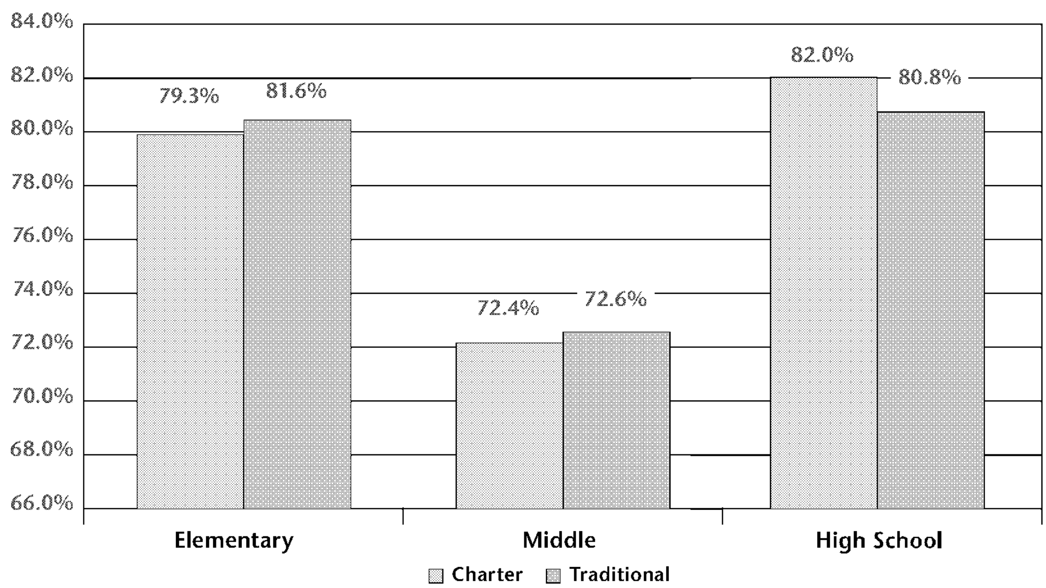
Percent of Students Scoring at Level 3 or Above on FCAT Math
High School Grades 9 and 10
Charter Schools and Traditional Public Schools, 2002 to 2009



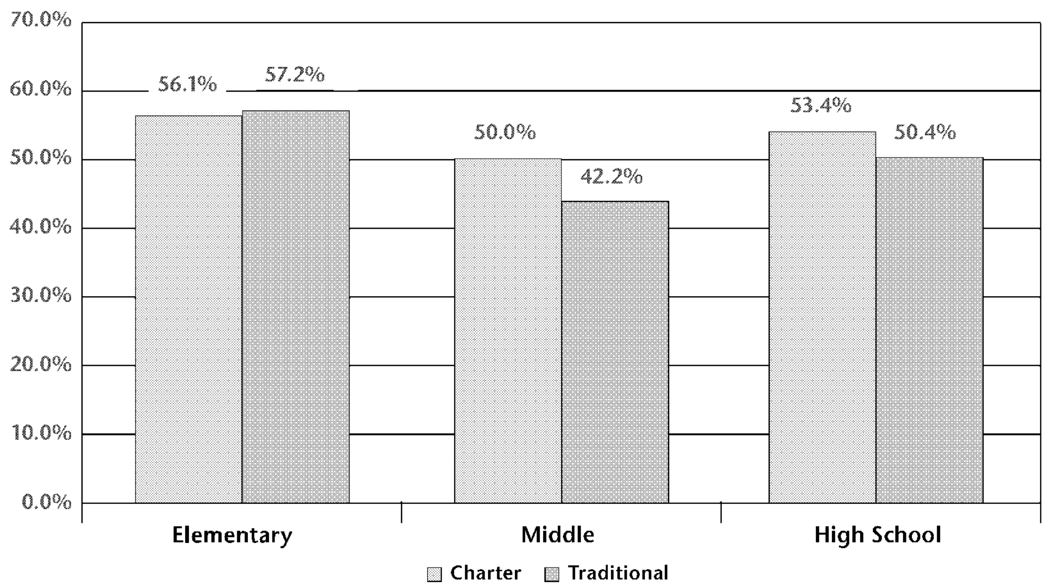
FCAT Math
Traditional Public Schools and Charter Schools

SUB-GROUP COMPARISONS 2009

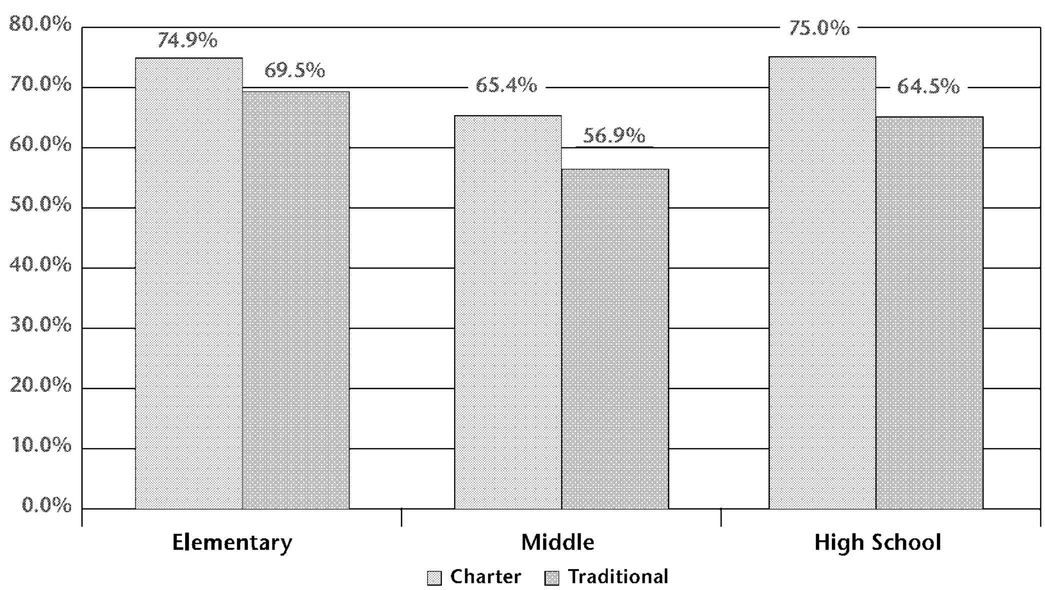
Percent of Students Scoring a Level 3 or Above on FCAT Math
Charter Schools and Traditional Public Schools
White Students



Percent of Students Scoring a Level 3 or Above on FCAT Math
Charter Schools and Traditional Public Schools
African-American Students

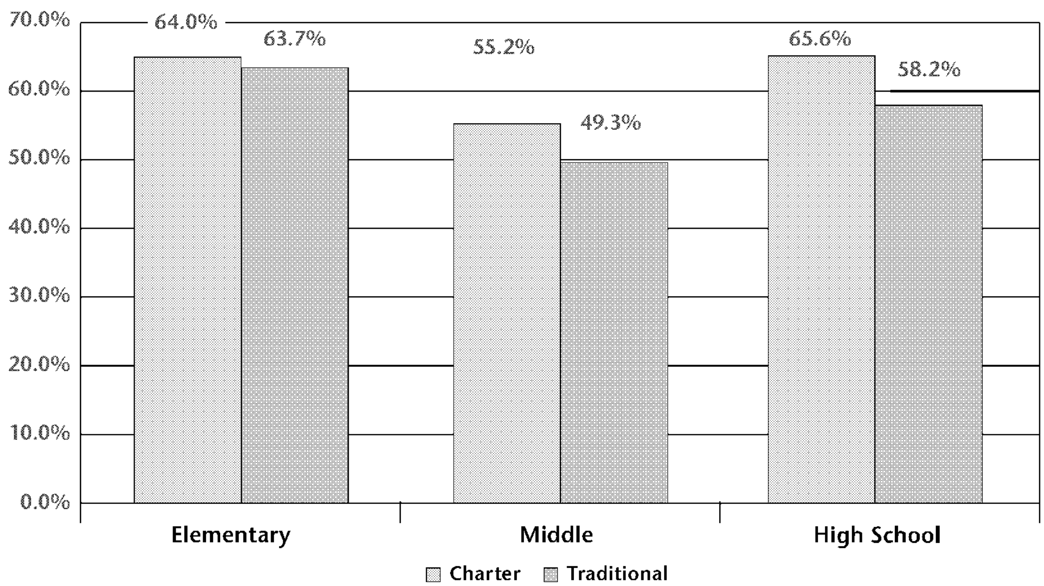


Percent of Students Scoring a Level 3 or Above on FCAT Math
Charter Schools and Traditional Public Schools
Hispanic Students

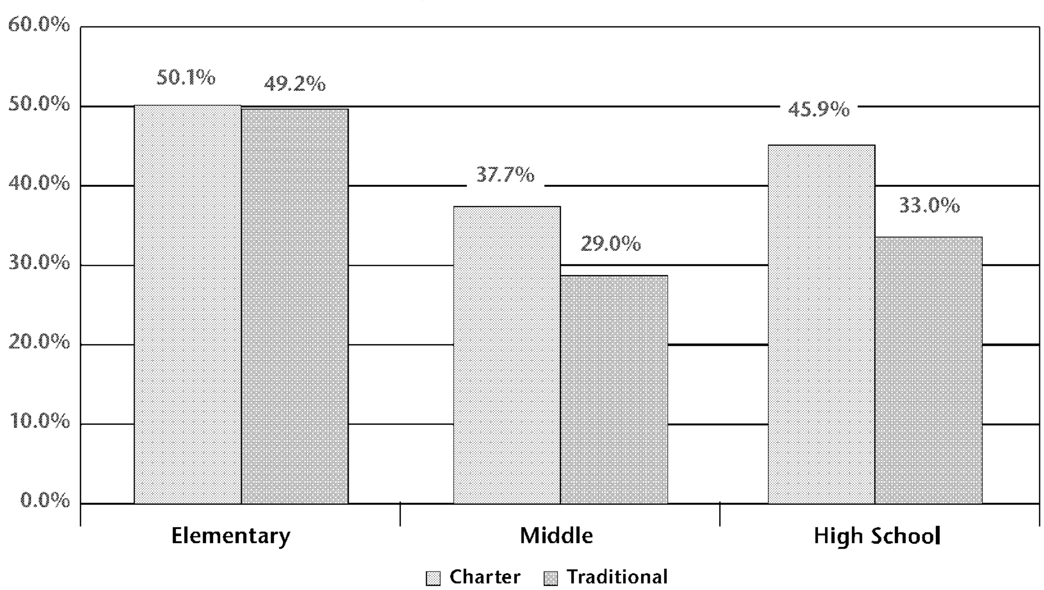


Math

Percent of Students Scoring a Level 3 or Above on FCAT Math
Charter Schools and Traditional Public Schools
FRL Students

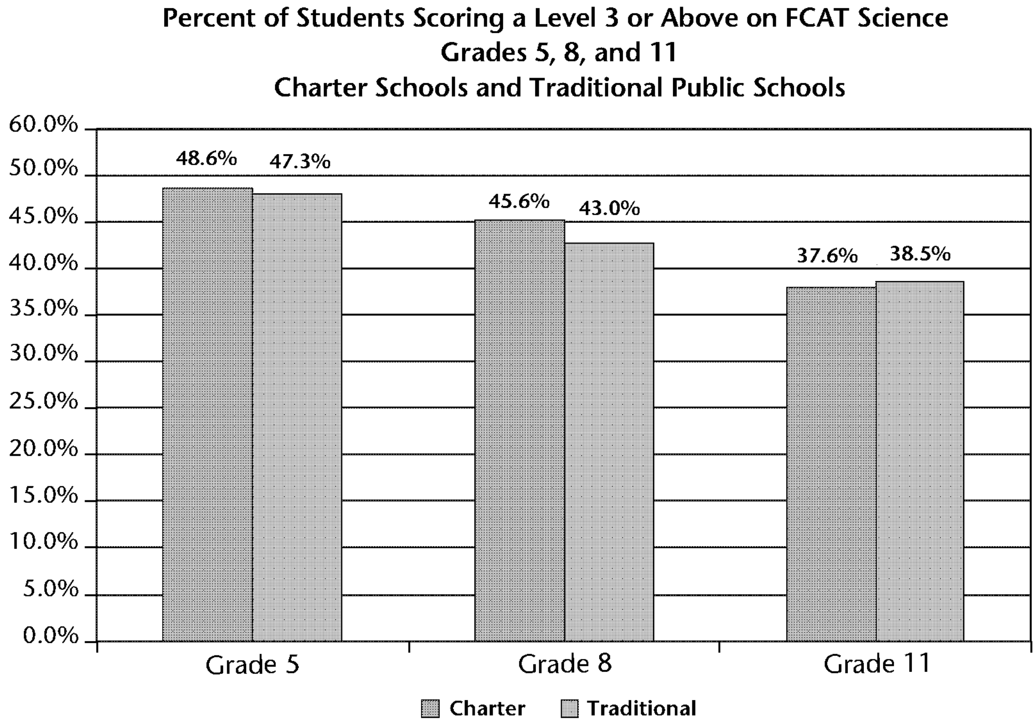


Percent of Students Scoring a Level 3 or Above on FCAT Math
Charter Schools and Traditional Public Schools
Exceptional Education Students

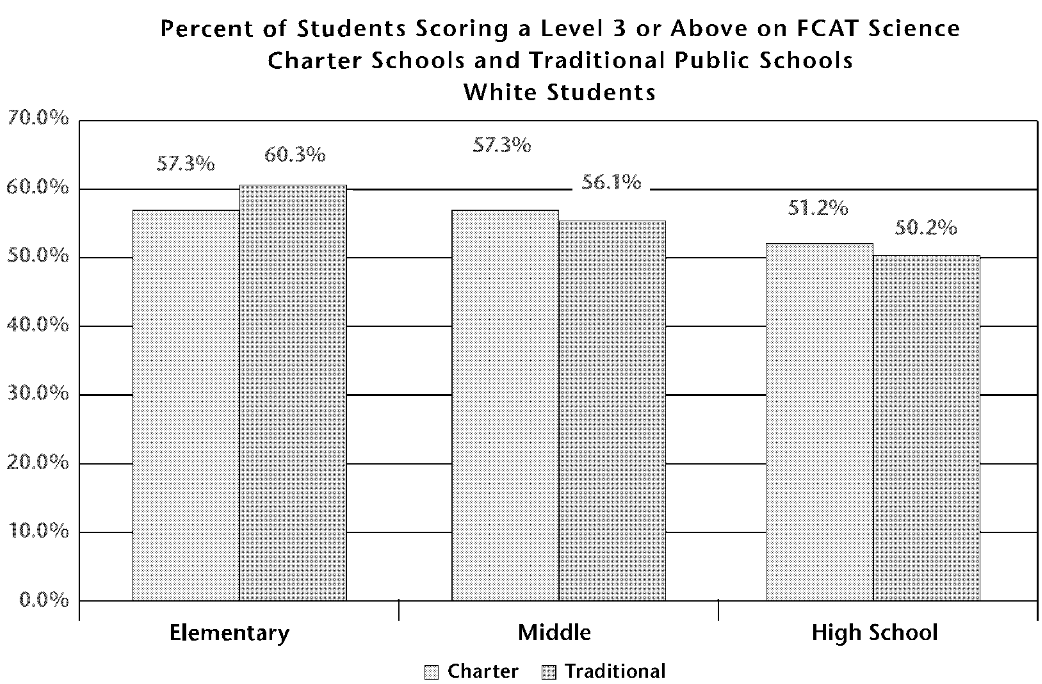


Science

FCAT Science
Traditional Public Schools and Charter Schools
2009

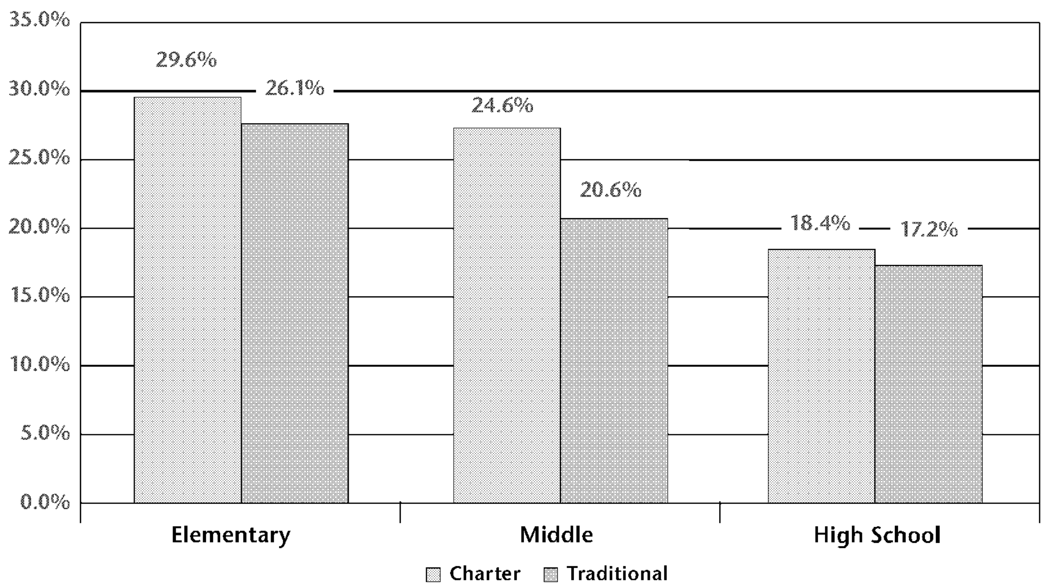


FCAT Science
Traditional Public Schools and Charter Schools
SUB-GROUP COMPARISONS 2009

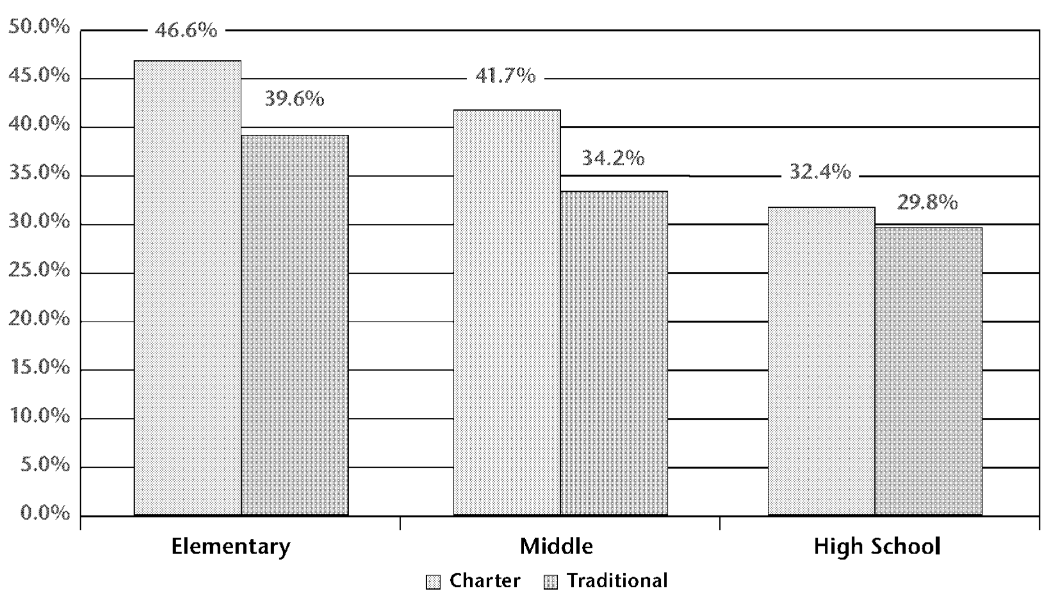


Science

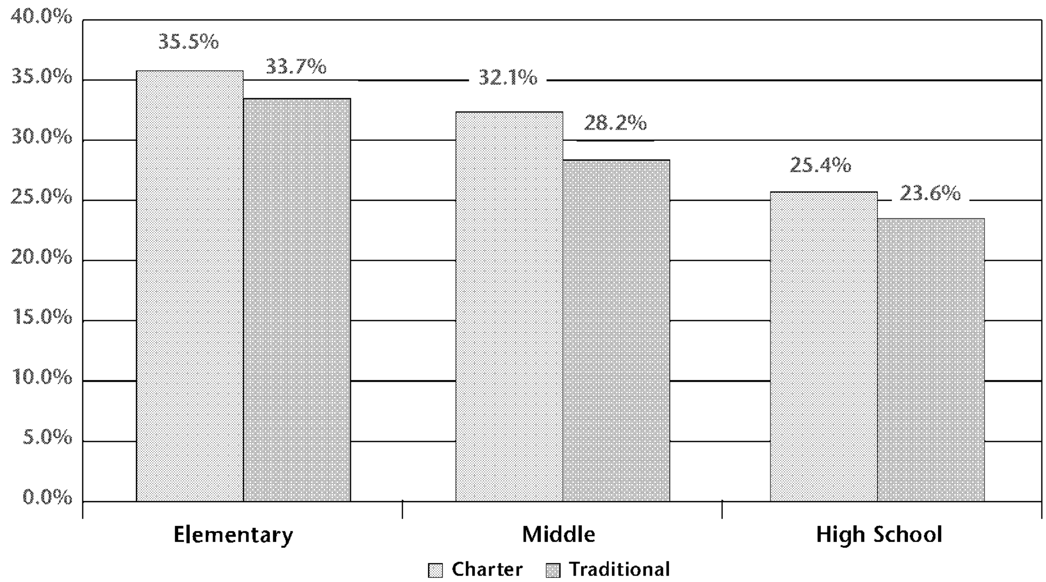
Percent of Students Scoring a Level 3 or Above on FCAT Science
Charter Schools and Traditional Public Schools
African-American Students



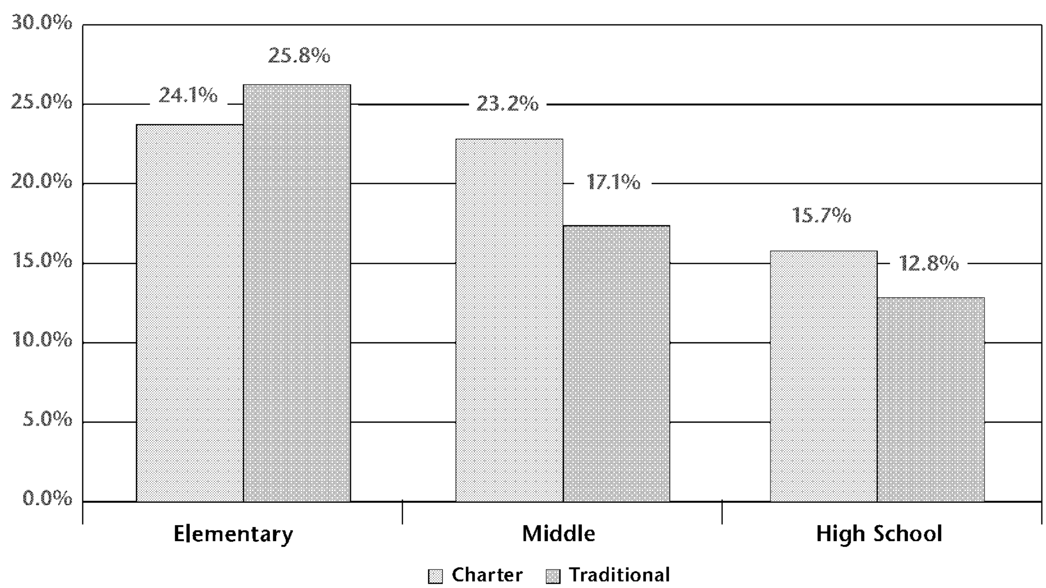
Percent of Students Scoring a Level 3 or Above on FCAT Science
Charter Schools and Traditional Public Schools
Hispanic Students



Percent of Students Scoring a Level 3 or Above on FCAT Science
Charter Schools and Traditional Public Schools
FRL Students

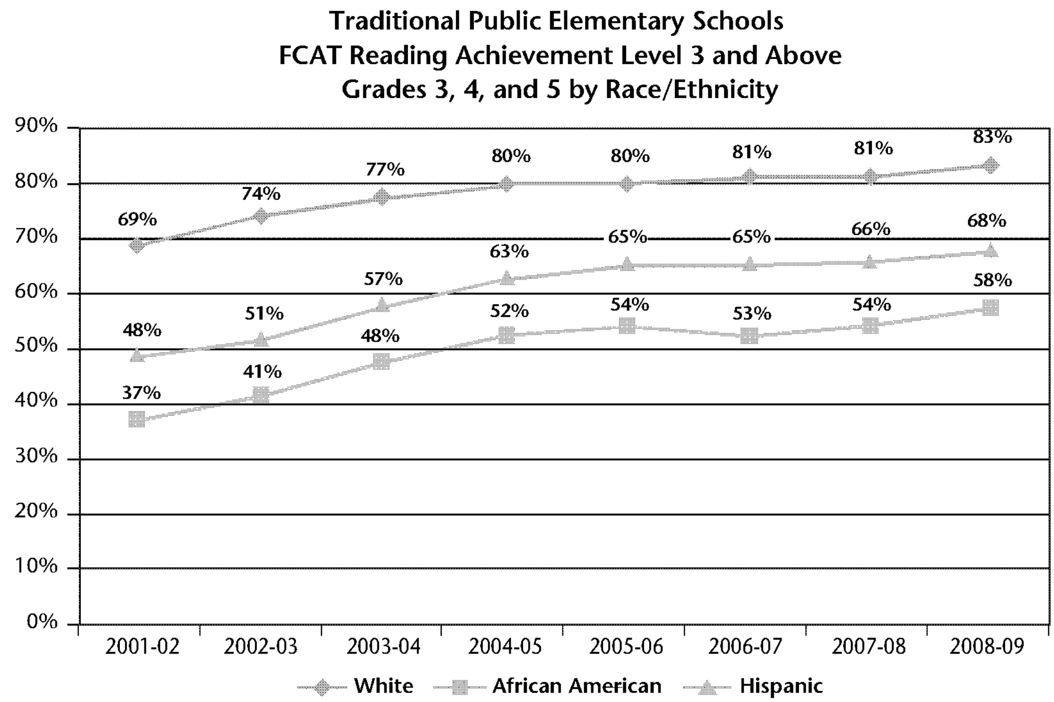


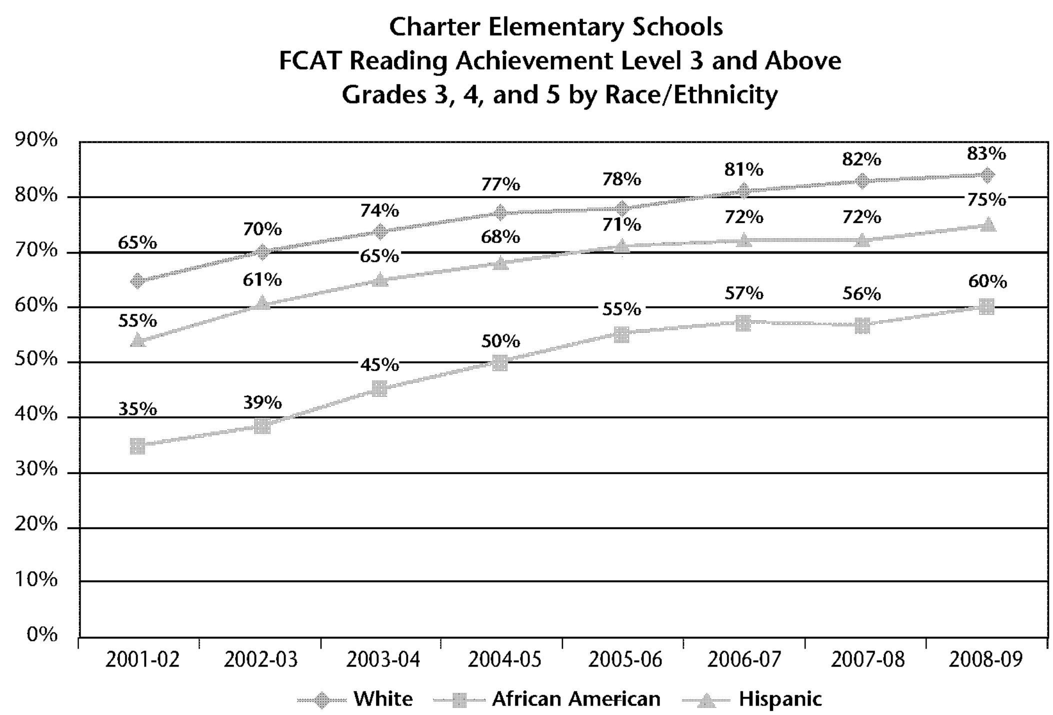
Percent of Students Scoring a Level 3 or Above on FCAT Science
Charter Schools and Traditional Public Schools
Exceptional Education Students



Closing the Achievement Gap in Reading Traditional Public Schools and Charter Schools 2002-2009

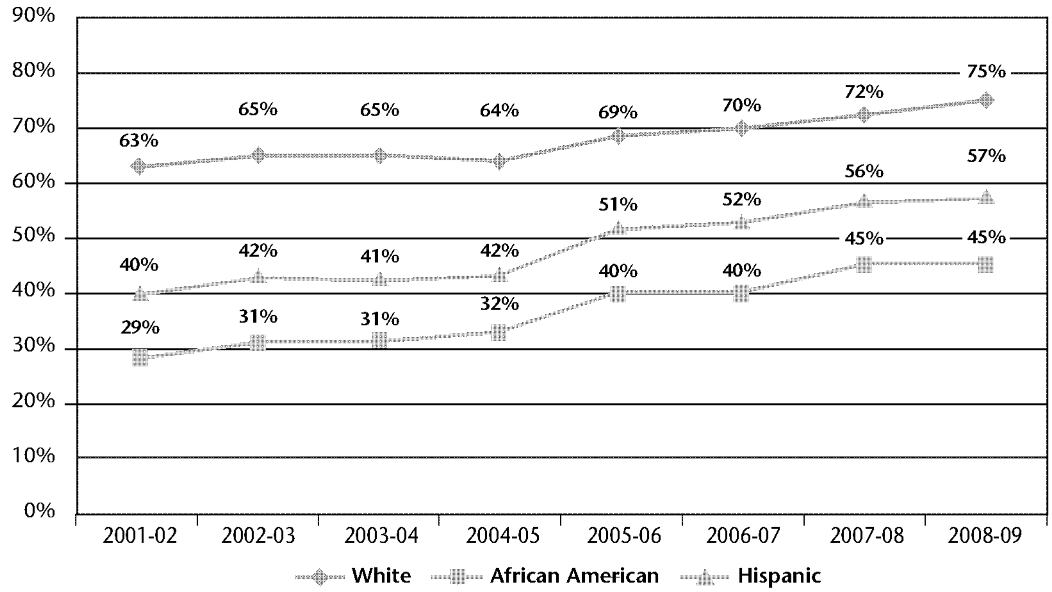
Reading



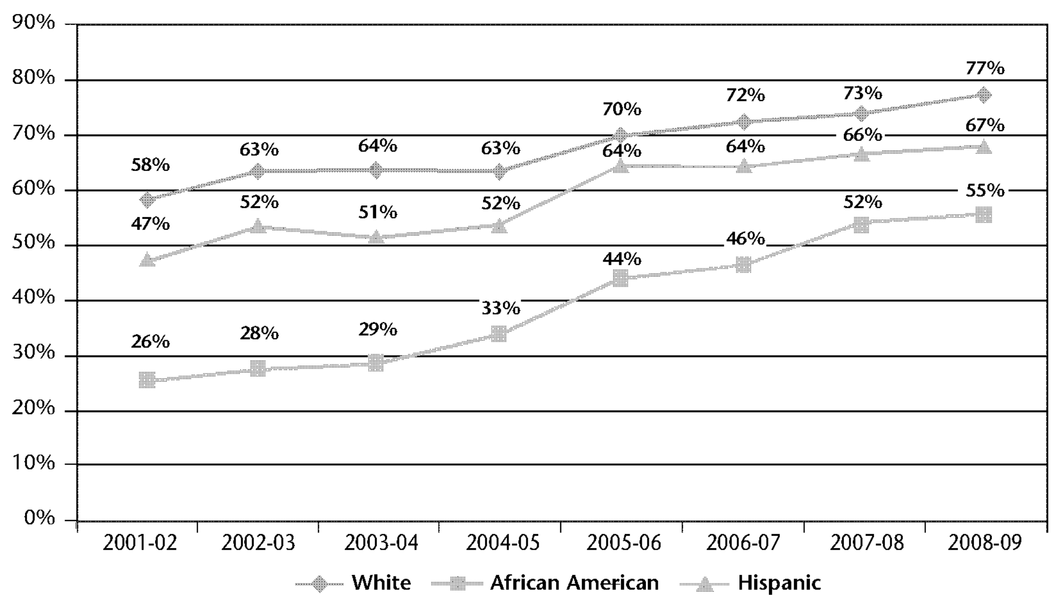


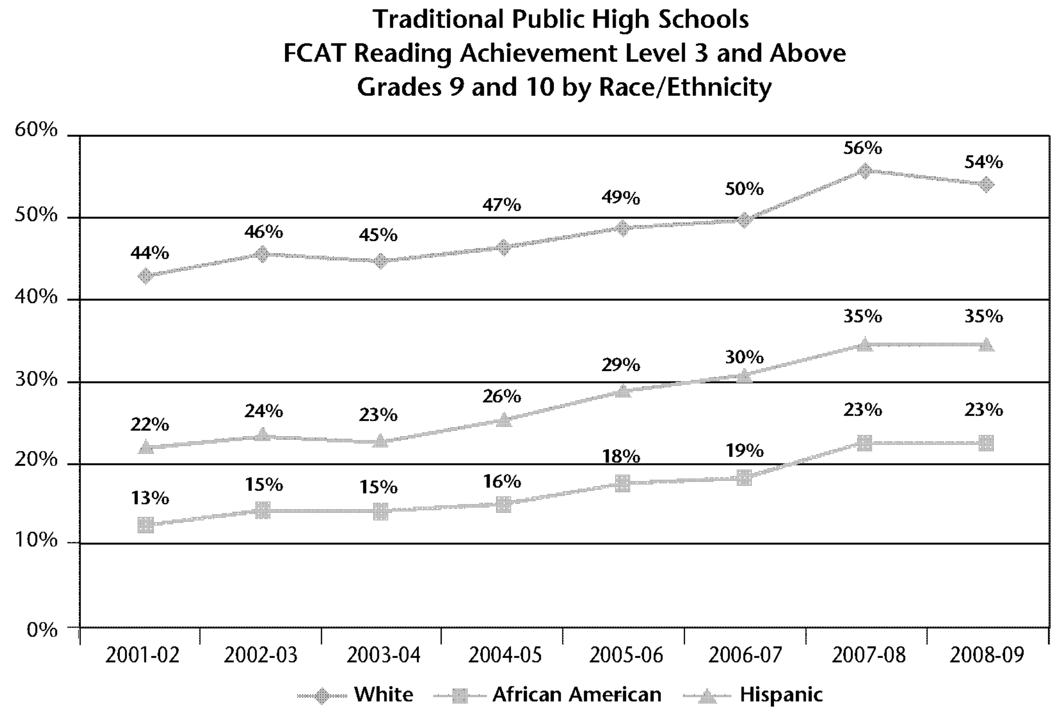
Reading

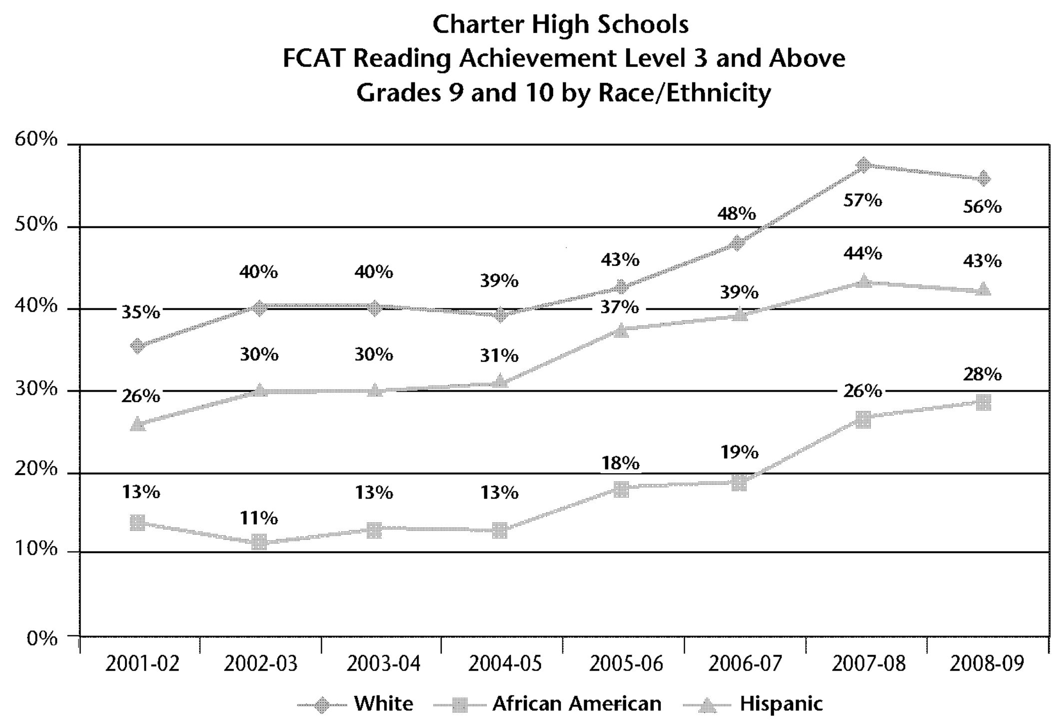
Traditional Public Middle Schools
FCAT Reading Achievement Level 3 and Above
Grades 6, 7, and 8 by Race/Ethnicity



Charter Middle Schools
FCAT Reading Achievement Level 3 and Above
Grades 6, 7, and 8 by Race/Ethnicity

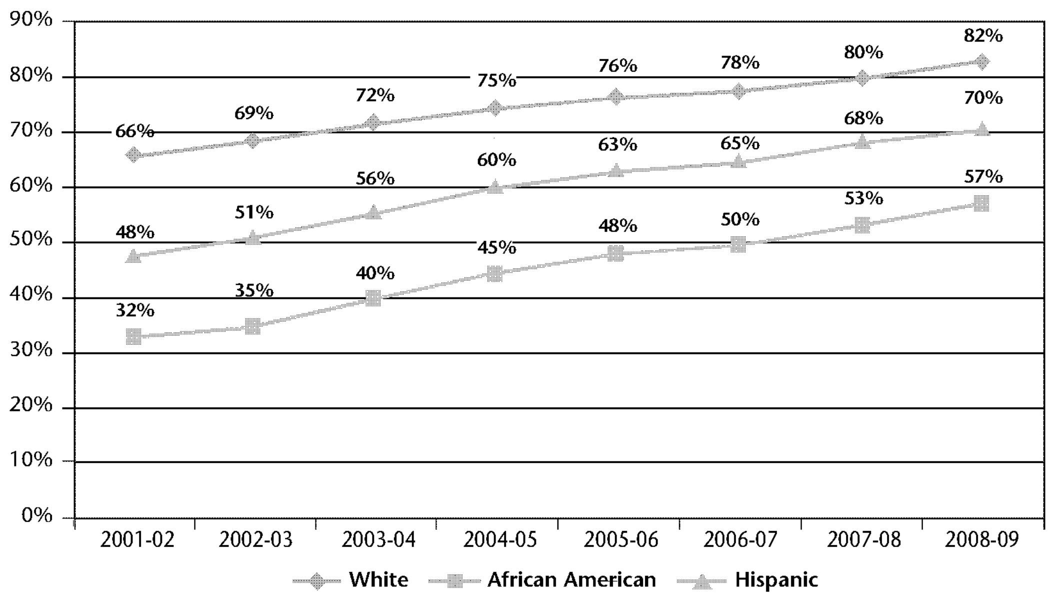



Traditional Public High Schools
FCAT Reading Achievement Level 3 and Above
Grades 9 and 10 by Race/Ethnicity
60%
50%
40%
30%
20%
10%
0%
44%
46%
45%
47%
49%
50%
56%
54%
22%
24%
23%
26%
29%
30%
35%
35%
13%
15%
15%
16%
18%
19%
23%
23%
2001-02
2002-03
2003-04
2004-05
2005-06
2006-07
2007-08
2008-09
White
African American
Hispanic

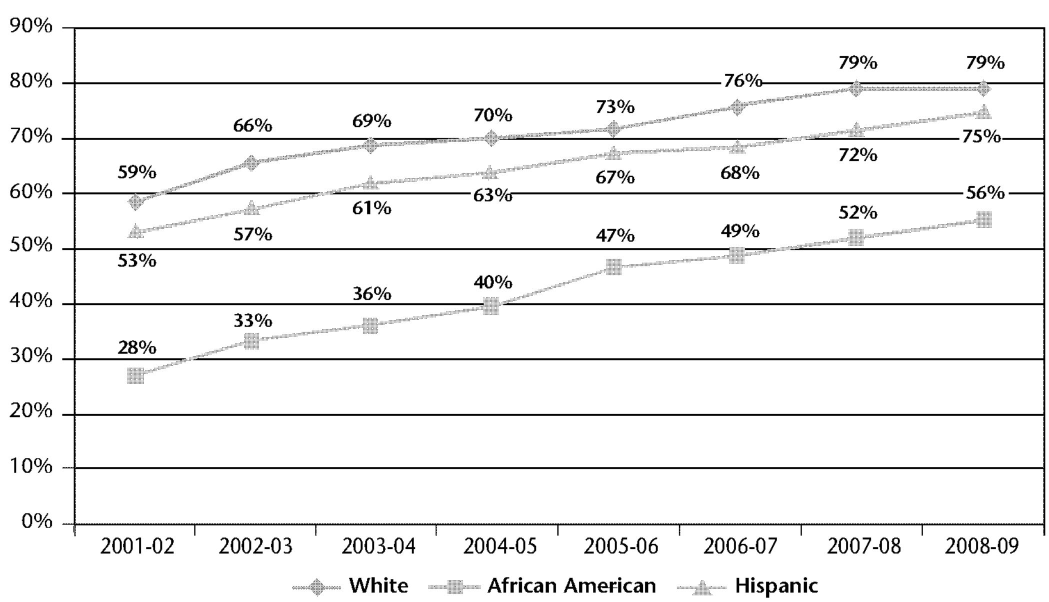

Charter High Schools
FCAT Reading Achievement Level 3 and Above
Grades 9 and 10 by Race/Ethnicity
60%
50%
40%
30%
20%
10%
0%
35%
40%
40%
39%
43%
48%
57%
56%
26%
30%
30%
31%
37%
39%
44%
43%
13%
11%
13%
13%
18%
19%
26%
28%
2001-02
2002-03
2003-04
2004-05
2005-06
2006-07
2007-08
2008-09
White
African American
Hispanic

Closing the Achievement Gap in Math Traditional Public Schools and Charter Schools 2002-2009

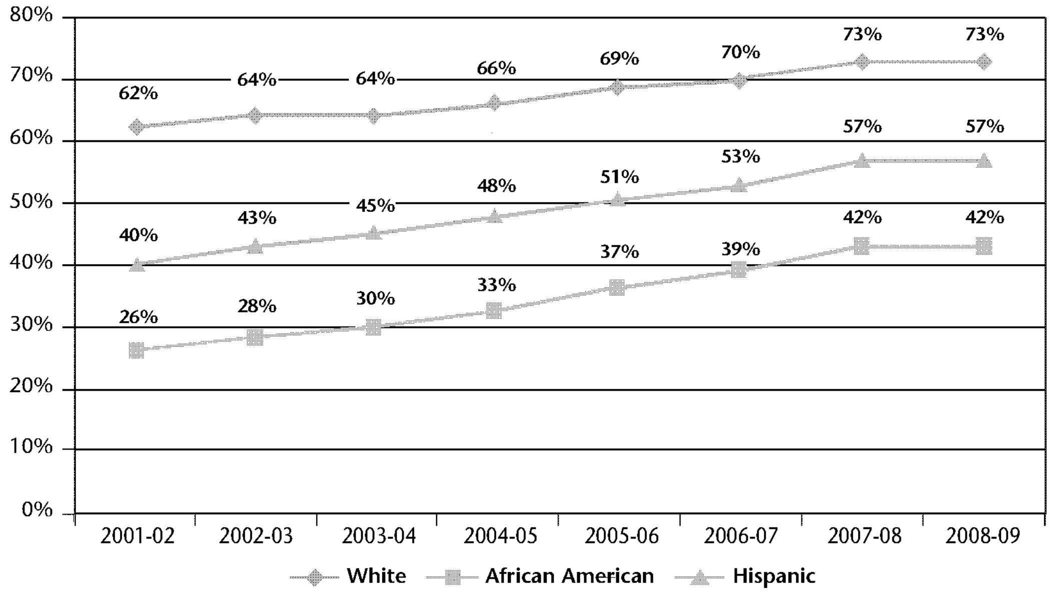
Traditional Public Elementary Schools FCAT Math Achievement Level 3 and Above Grades 3, 4, and 5 by Race/Ethnicity



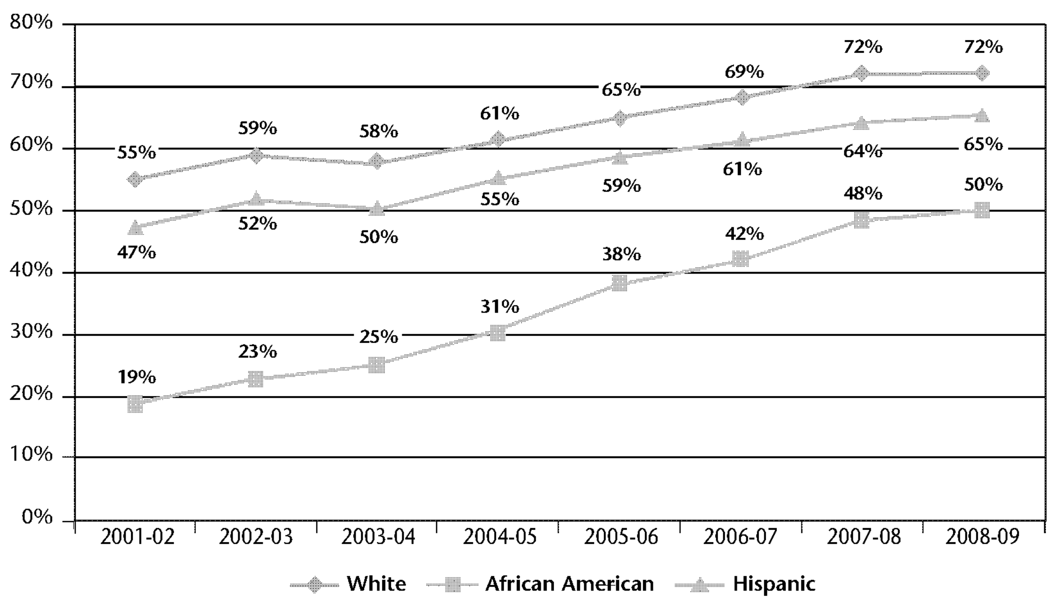
Charter Elementary Schools FCAT Math Achievement Level 3 and Above Grades 3, 4, and 5 by Race/Ethnicity



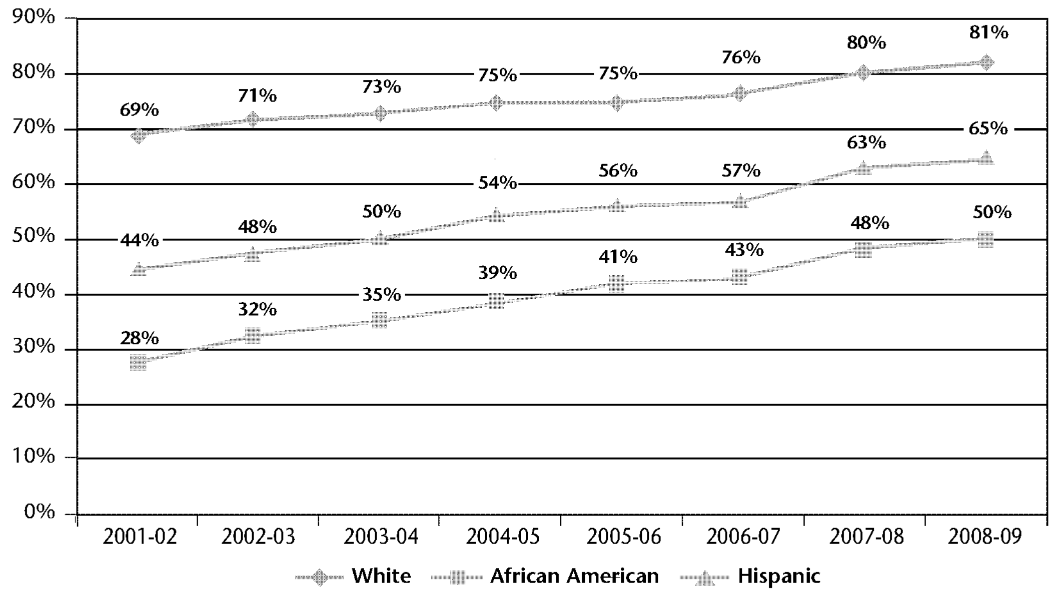
Traditional Public Middle Schools
FCAT Math Achievement Level 3 and Above
Grades 6, 7, and 8 by Race/Ethnicity



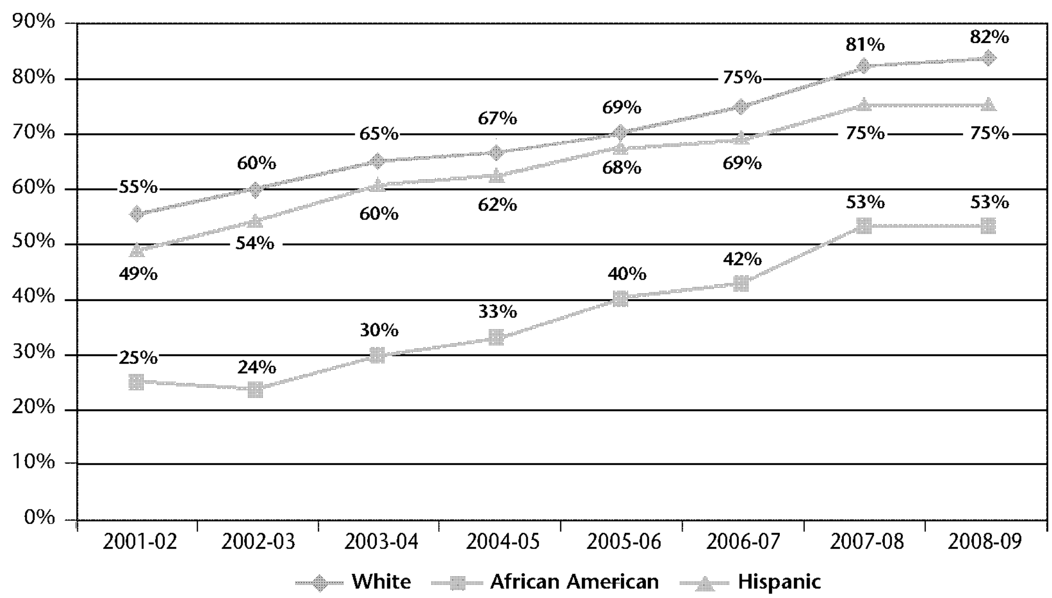
Charter Middle Schools
FCAT Math Achievement Level 3 and Above
Grades 6, 7, and 8 by Race/Ethnicity



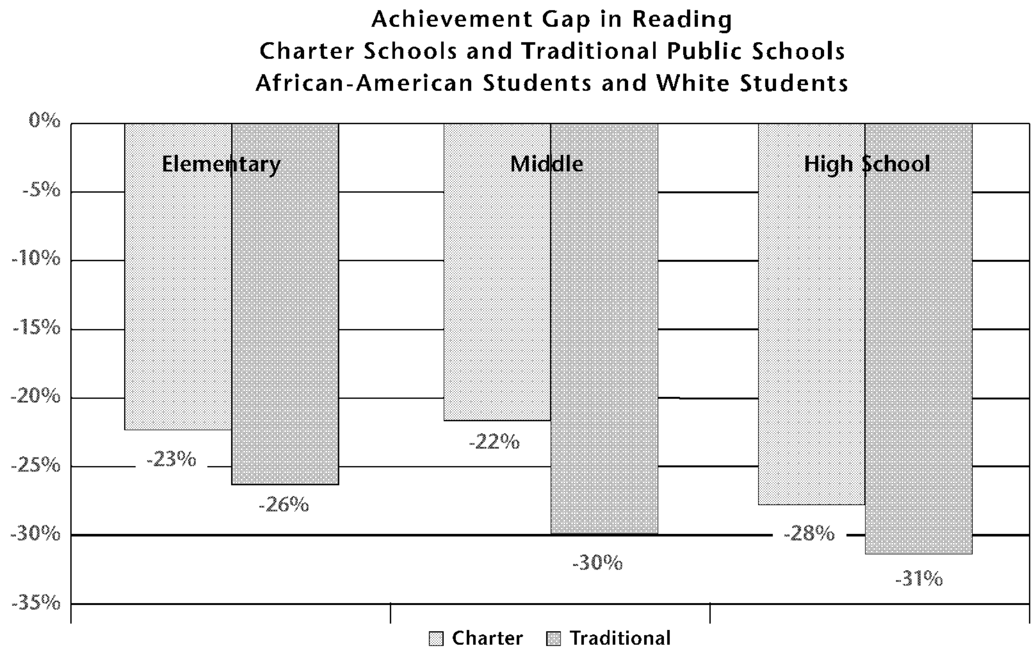
Traditional Public High Schools
FCAT Math Achievement Level 3 and Above
Grades 9 and 10 by Race/Ethnicity

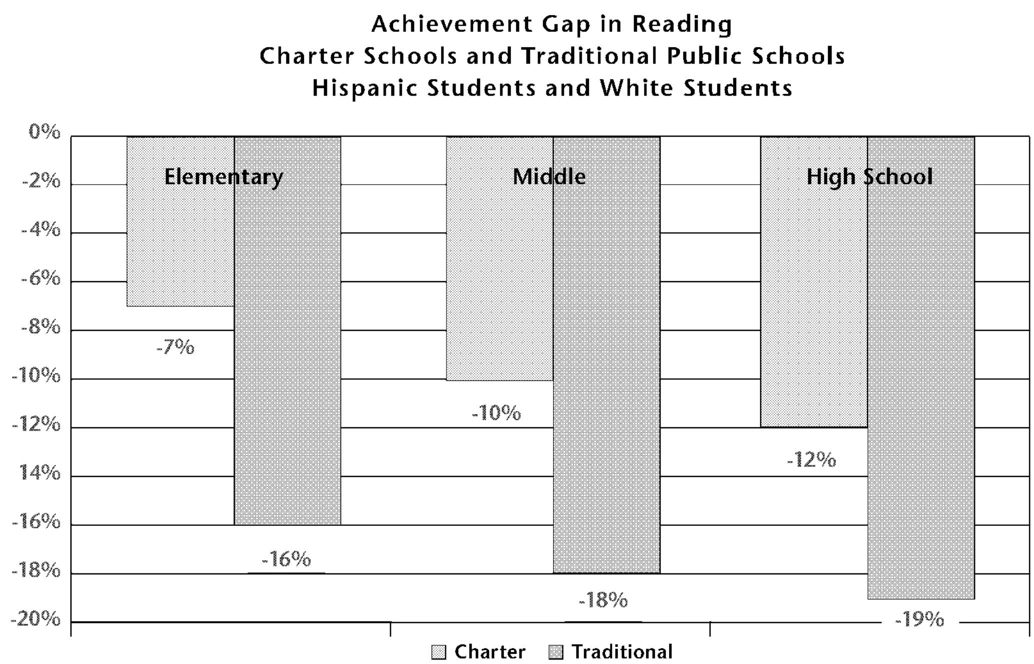


Charter High Schools
FCAT Math Achievement Level 3 and Above
Grades 9 and 10 by Race/Ethnicity

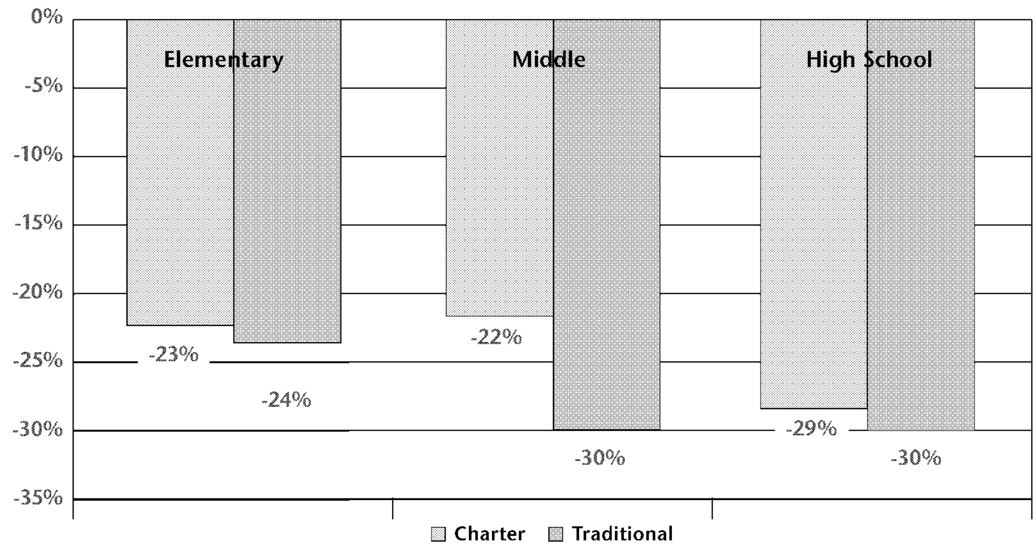


Achievement Gap Summary Data
2008-09 School Year

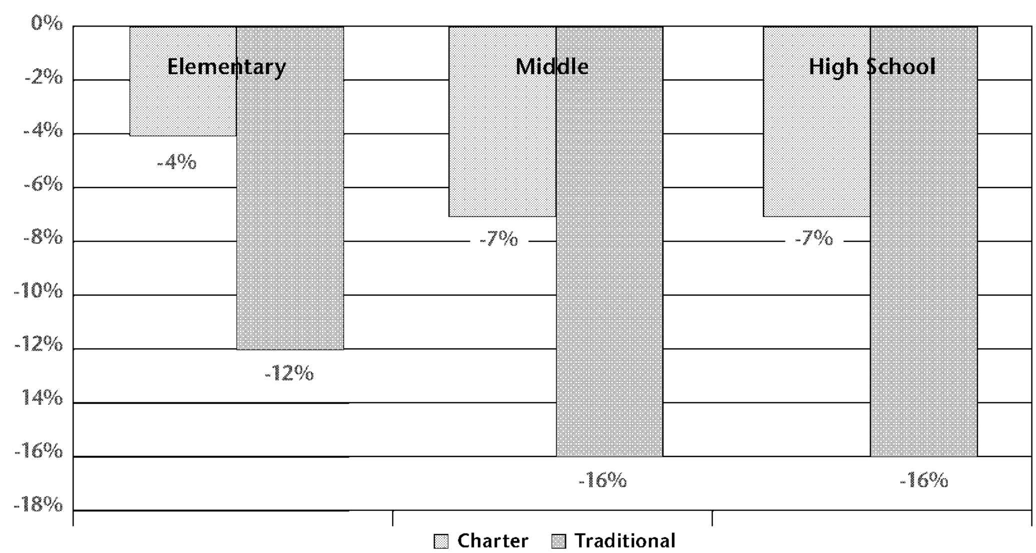




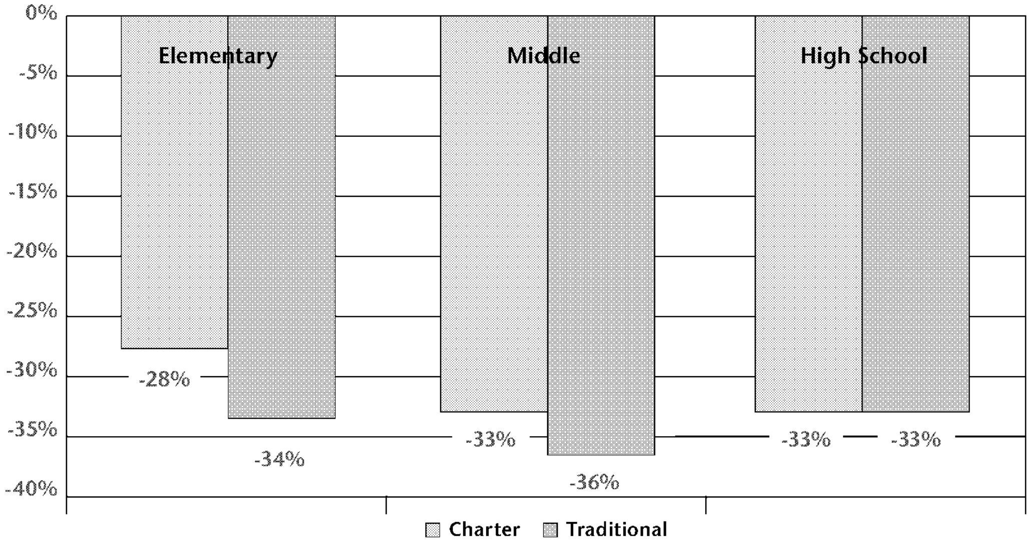
Achievement Gap in Math
Charter Schools and Traditional Public Schools
African-American Students and White Students



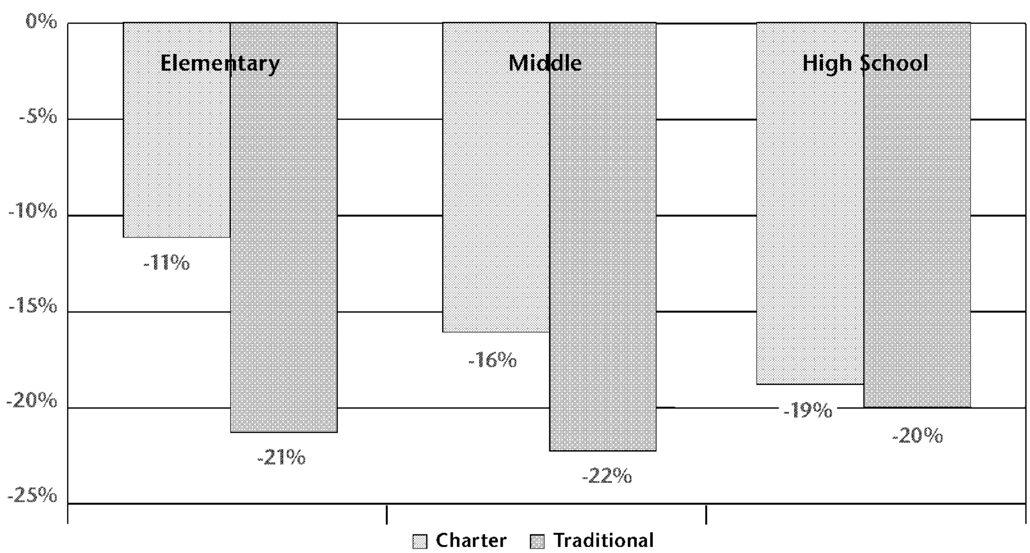
Achievement Gap in Math
Charter Schools and Traditional Public Schools
Hispanic Students and White Students



Achievement Gap in Science
Charter Schools and Traditional Public Schools
African-American Students and White Students

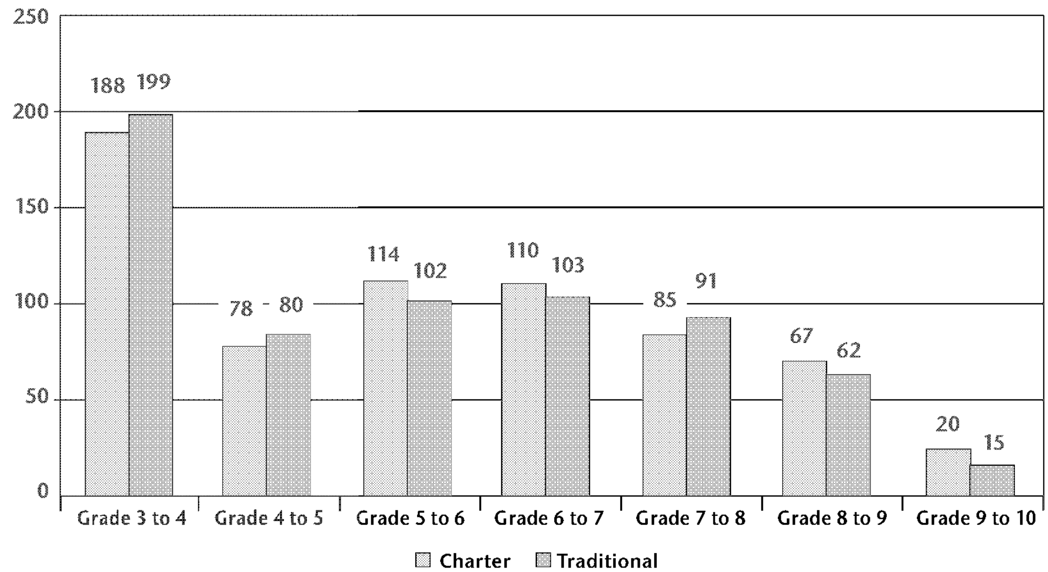


Achievement Gap in Science
Charter Schools and Traditional Public Schools
Hispanic Students and White Students

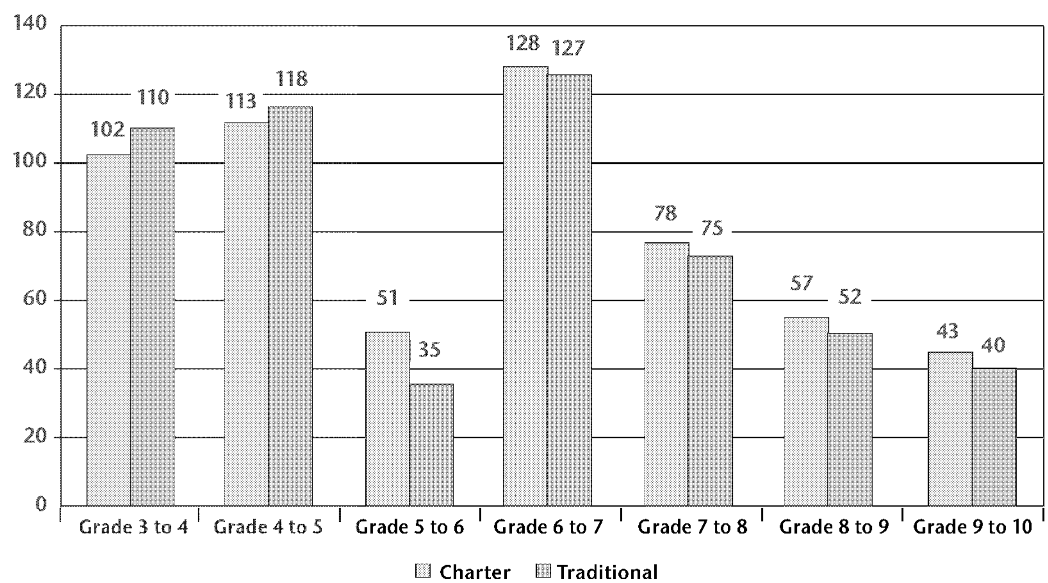


Developmental Scale Scores Learning Gains Comparison 2008-2009 School Year

DSS Gains Reading
Charter Schools and Traditional Public Schools



DSS Gains Math
Charter Schools and Traditional Public Schools



Key Achievement Findings

The ultimate proof of success for any charter school is the achievement of its students. If students are not learning at or above the levels at which they were learning when they enrolled in a charter school, then the primary mission of the charter school has not been accomplished. The analysis of 2008-09 student achievement data demonstrates that charter schools offer parents and policy makers a viable option for improving education in the state.

The data contained in this report is derived from student performance on the Florida Comprehensive Achievement Test (FCAT), and is designed to allow a comparative analysis of the academic achievement of students attending charter schools versus students attending traditional public schools. The report contains data spanning eight years of FCAT results. Using data from the 2008-2009 school year the report makes 86 comparisons covering three measurements: FCAT proficiency percentages, achievement gaps, and learning gains. Each of these measurement areas are further broken down to offer a more nuanced view of student achievement.

The FCAT proficiency percentages are used to measure both overall rates of proficiency by grade groupings, as well as comparisons of subgroup performance. This section of the report contains 54 separate comparisons of student achievement. Charter school students outperformed traditional public school students in 47 of the 54 comparisons.

The achievement gap section of the report contains both historical and current data that is used to analyze the gap between white students and African American students and white students and Hispanic students, in reading, math, and science. This section of the report includes 18 separate comparisons of current achievement gaps. The achievement gap was lower for charter school students in 17 of the 18 comparisons, with one tie.

The learning gains section of the report contains data on the FCAT Developmental Scale Scores. The data includes 14 comparisons of the learning gains made by charter school students and traditional public school students. Charter school students had higher average learning gains in 9 of the 14 comparisons

Data

DATA 2008-2009					
		Charter		Traditional	
Total # of Students with FCAT results	Reading	63,590		1,386,911	
	Math	63,560		1,384,649	
Total % Proficient					
	Reading	%	Total Students	%	Total Students
	Elem	76.2	25,678	73.2	529,549
	Mid	69.6	28,144	63.7	515,257
	High	44.7	9,768	43	147,255
	Math				
	Elem	73.6	25,688	72.9	529,456
	Mid	65.9	28,141	62.1	514,908
	High	73.3	9,731	70.5	340,285
	Science				
	Elem	48.6	8,137	47.3	171,966
	Mid	45.6	8,308	43	171,106
	High	37.6	4,349	38.5	150,068
Total % Proficient by Race					
	Reading - White				
	Elem	82.7	11,241	83.1	237,993
	Mid	77.1	11,559	74.7	241,481
	High	55.5	3,622	54.2	167,870
	Math - White				
	Elem	79.3	11,239	81.6	237,949
	Mid	72.4	11,553	72.6	241,330
	High	82	3,614	80.8	167,180
	Science - White				
	Elem	57.3	3,611	60.3	78,910
	Mid	57.3	3,335	56.1	81,053
	High	51.2	1,677	50.2	75,019
	Reading - African Am.				
	Elem	60.1	4,619	57.5	118,522
	Mid	55.2	5,242	44.8	112,950
	High	27.6	2,104	23.1	73,147
	Math - African Am.				
	Elem	56.1	4,626	57.2	118,474
	Mid	50	5,247	42.2	112,867
	High	53.4	2,088	50.4	72,693
	Science - African Am.				
	Elem	29.6	1,458	26.1	37,420
	Mid	24.6	1,497	20.6	37,263
	High	18.4	912	17.2	31,898

	Reading - Hispanic				
	Elem	75.3	7,970	67.6	135,475
	Mid	67.2	9,721	56.9	127,267
	High	43.2	3,575	35.2	81,080
	Math - Hispanic				
	Elem	74.9	7,975	69.5	135,473
	Mid	65.4	9,719	56.9	127,178
	High	75	3,566	64.5	80,459
	Science - Hispanic				
	Elem	46.6	2,485	39.6	43,490
	Mid	41.7	3,006	34.2	42,038
	High	32.4	1,542	29.8	34,292
Total % Proficient by Free and Reduced Lunch					
	Reading				
	Elem	66.5	10,260	63.3	298,828
	Mid	59.6	11,726	51.3	265,877
	High	33.4	3,838	28.9	142,949
	Math				
	Elem	64	10,273	63.7	298,751
	Mid	55.2	11,724	49.3	265,633
	High	65.6	3,831	58.2	141,954
	Science				
	Elem	35.5	3,146	33.7	94,285
	Mid	32.1	3,310	28.2	84,763
	High	25.4	1,544	23.6	56,011
Total % Proficient by ESE					
	Reading				
	Elem	49.6	2,549	45.3	78,494
	Mid	42.2	2,401	31.2	66,394
	High	18.5	713	13.9	35,828
	Math				
	Elem	50.1	2,557	49.2	78,481
	Mid	37.7	2,405	29	66,318
	High	45.9	711	33	35,472
	Science				
	Elem	24.1	742	25.8	24,815
	Mid	23.2	673	17.1	21,381
	High	15.7	299	12.8	14,033

Florida Department of Education
Eric J. Smith, Commissioner
www.fldoe.org

Office of Independent Education and Parental Choice
325 West Gaines Street, Suite 522
Tallahassee, FL 32399-0400
850/245-0502
www.floridaschoolchoice.org

Bureau of Research and Evaluation
325 West Gaines Street, Suite 834
Tallahassee, FL 32399-0400
850/245-0429
www.fldoe.org/evaluation/

November 2009

SCHOOL CHOICE
Florida Department of Education

FLORIDA'S CHARTER Schools

F3-1: VPK FACT SHEET JANUARY 2010

Office of
Early Learning

(b)(6)

Implementing Florida's Voluntary Prekindergarten (VPK) Education Program

The Department of Education/Office of Early Learning (DOE/OEL) works in collaboration with the Agency for Workforce Innovation (AWI) and the Department of Children and Families (DCF) to implement the Voluntary Prekindergarten (VPK) Education program, with specific responsibilities for the following:

- Administration of accountability requirements at the state-level
- Provision of professional development including emergent literacy and director credential course(s)
- Approval of VPK director credential requirements
- Adoption/administration of a statewide kindergarten screening
- Review and approval of curricula for providers on probation for failure to meet readiness rate
- Calculation of kindergarten readiness rate
- Articulation of the Child Development Associate (CDA) or Florida Child Care Professional Certificate (FCCPC) (previously referred to as the Florida CDA-Equivalency (CDA-E)) credential toward a post secondary degree.

Recent VPK Accomplishments

- The Training Management System (TMS) is available to providers wishing to register for Professional Development opportunities at www.myflorida.com/childcare
- Online VPK Teacher Toolkit targeting VPK Language and Vocabulary folder is available at www.flvpkonline.org/teachertoolkit
- Online *Language and Vocabulary in the VPK Classroom* course is now available! You may now register for this DOE-approved online course by visiting Department of Children and Families' Web site at https://training01-dcf.myflorida.com/dcf/cct/inf0001.html . Successful completion of this five-hour course will generate 0.5 CEUs.
- 147,765 children or 63% of all four-year-olds participated in the 2008-09 VPK Program
- 141,070 children or 61% are enrolled in the 2009-10 School Year VPK Program (as of December 29, 2009)

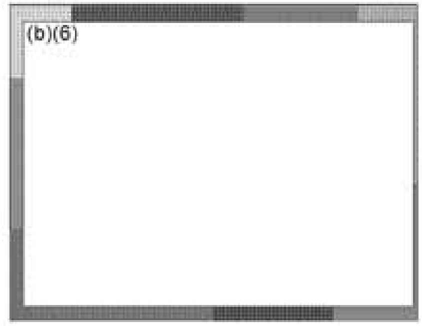
DOE Online Courses

Course (Release Date)	Participants as of December 31, 2009	Participants who Successfully Completed the Course
Emergent Literacy Online Course (2006)	62,734	46,111 (73.5%)
VPK Director Credential Online Course (2006)	19,164	10,765 (56%)
English Language Learners Online Course (2009)	3311	3,006 (91%)

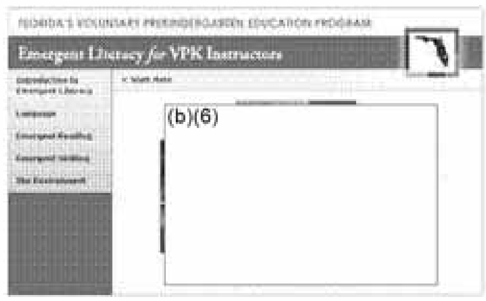
Selected DOE Instructor Led Courses

Course (Release Date	Manuals Distributed as of December 31, 2009
VPK Standards Training (2005)	17,408
VPK Standards Training (2008)	12,904
Total	**30,312**
It's Okay to Play Parent Workshop (2007)	153,188

DOE/OEL provides training and technical assistance through regularly-scheduled telephone conference calls with school districts and coalitions, product distribution, video teleconferences, other meeting and conference presentations, and its website.



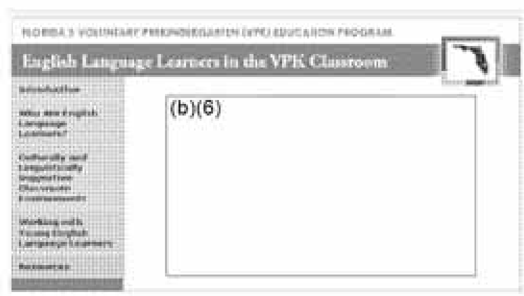
DOE/OEL provides a network of VPK Regional Facilitators working with early learning coalitions and public and private providers throughout the state. Facilitators conduct training on various topics to include the VPK Education Standards. If you are interested in viewing and/or registering for a DOE-approved online or instructor-led course, please go to DCF's website at https://training01-dcf.myflorida.com/dcf/cct/reg/courseselector



Coming Soon

VPK Teacher Toolkit Additions:
http://www.flvpkonline.org/teachertoolkit/

- Mathematical Thinking folder **available NOW!**
- Emergent Literacy folder **available Spring 2010**
- English Language Learners folder **available Spring 2010**



For further information on DOE VPK initiatives or any of these materials, please contact

Shan Goff, Executive Director
Office of Early Learning
Florida Department of Education
325 West Gaines Street
Turlington Building, Suite 514
Tallahassee, FL 32399-0400
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Email: earlylearning@fldoe.org

F3-2: 2007-08 VPK VS NONVPK COMPARISONS ON KINDERGARTEN SCREENING

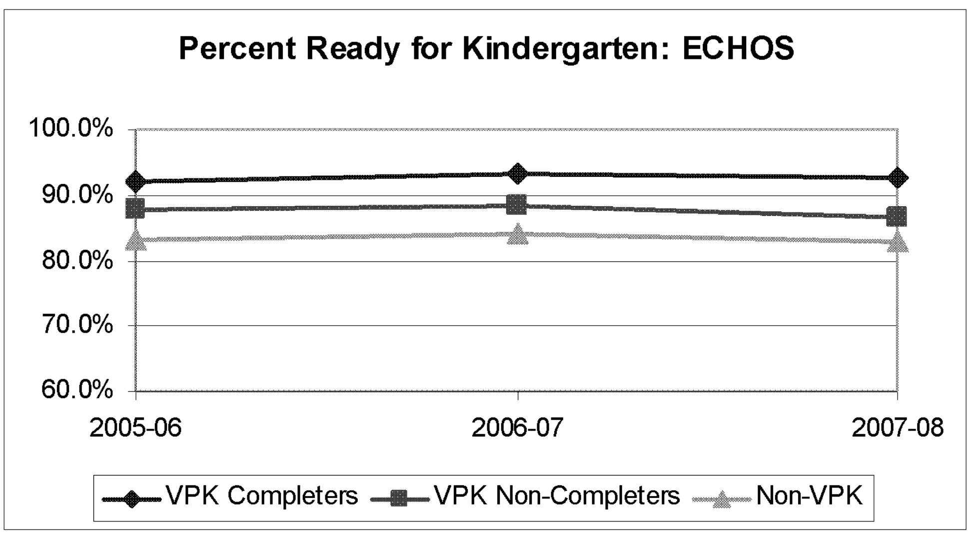
Florida Department of Education
Office of Early Learning

Kindergarten Screening

- The kindergarten screening instruments used for 2006-07, 2007-08 and 2008-09 included the Early Childhood Observation System™ and the first two measures of the Dynamic Indicators of Basic Early Literacy Skills™; Letter Naming Fluency and Initial Sound Fluency.
- Screening occurs during the first 30 days of kindergarten.
- VPK participants attending kindergarten in nonpublic schools are also provided opportunities to participate in the screening.

Early Childhood Observation System (ECHOS)

- The results for the ECHOS are calculated by using the ratings teachers assigned to 19 activities as a result of their on-going classroom observation. These 19 activities include skills such as:
  - Knowing how to use a book (Concepts of Print)
  - Retelling a story or part of a story that has been read to the class (Oral Language/Vocabulary)
  - Recognizes, creates, and analyses patterns (Algebraic Thinking)
  - Talks to and plays cooperatively with other children (Social Problem Solving).
- Children that are considered "Ready for Kindergarten" have scored at the "Demonstrating" or "Emerging/Progressing" levels.



ECHOS	2005-06	2006 -07	2007 -08
VPK Completers	92.0%	93.4%	92.5%
VPK Non-Completers 87.9%		88.3%	86.5%
Non-VPK 83.3%		84.1%	83.0%

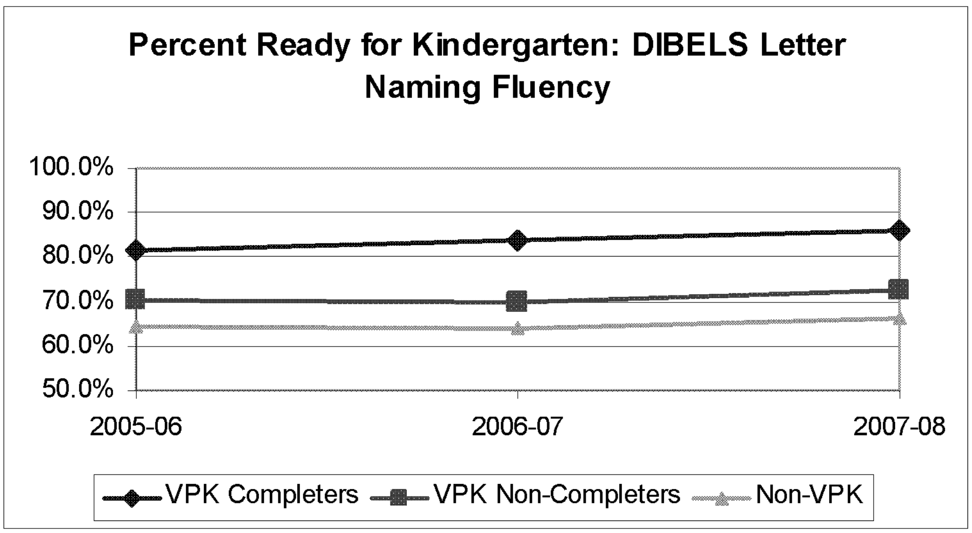
F3-2: 2007-08 VPK VS NONVPK COMPARISONS ON KINDERGARTEN SCREENING

Florida Department of Education
Office of Early Learning

DIBELS – Letter Naming Fluency (LNF)

- The Letter Naming Fluency measures pre-reading and early reading skills. Specifically, the student's ability to "see – say" upper and lower case letters of the alphabet.

- Children considered "Ready for Kindergarten" have scored at the "Above Average" or "Low Risk" levels.



DIBELS LN	2005-06	2006 -07	2007 -08
VPK Completers	81.7%	83.6%	86.2%
VPK Non-Completers 70.4%		70.0%	72.6%
Non-VPK 64.3%		64.0%	66.4%

March 9, 2009

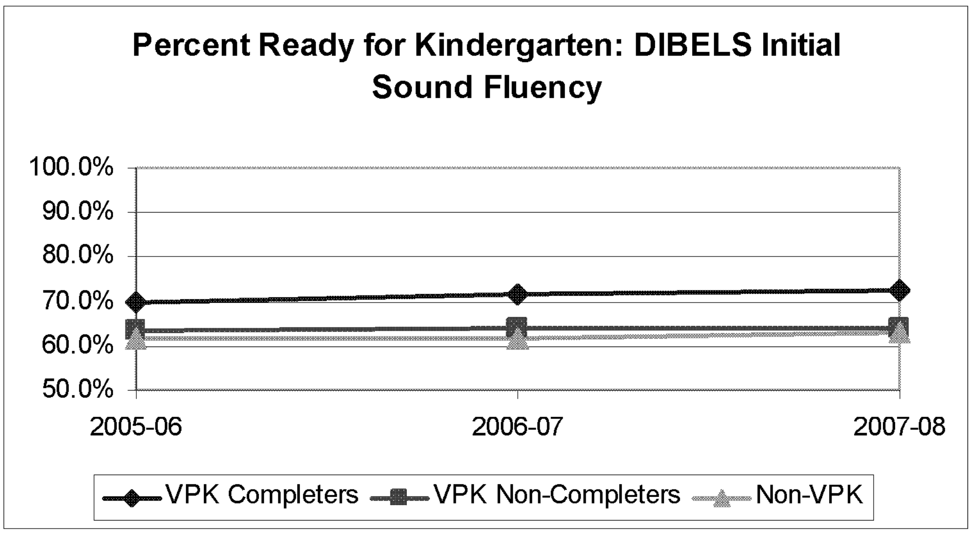
F3-2: 2007-08 VPK VS NONVPK COMPARISONS ON KINDERGARTEN SCREENING

Florida Department of Education
Office of Early Learning

DIBELS – Initial Sound Fluency

- The Initial Sound Fluency measures pre-reading and early reading skills. Specifically, the student's ability to recognize the beginning sound(s) in a spoken word.

- Children considered "Ready for Kindergarten" have scored at the "Above Average" or "Low Risk" levels.



DIBELS IS	2005-06	2006 -07	2007 -08
VPK Completers	69.9%	71.6%	72.7%
VPK Non-Completers 63.7%		63.8%	64.1%
Non-VPK 61.8%		61.8%	63.2%

March 9, 2009

P-1: STEM*florida* Mission

Florida will be a national leader in market relevant STEM talent development and retention.

Declaration of *Inter*dependence:

- Declaration of Interdependence created to build STEM awareness and document shared STEM roles and responsibilities*
- Database of Declaration's signers to be used for ongoing communications **

STEM*florida* Web Portal

- http://www.stemflorida.net/ created to encourage increased business engagement and serve as a central STEM site for all stakeholder groups **

State of STEM in Florida

- January 2010 State of STEM in Florida created to define baseline report of STEM workforce preparedness relative to employer talent requirements *
- Annual update to be created to show progress toward meeting employer needs **

STEM*florida* Business Roundtables and Report

- 5 business roundtables were held around the state to obtain input from the business community as to specific STEM talent workforce needs, and to build business-led consensus for goals needed in STEM strategic plan. *
- Individual and summary Roundtable Reports posted *

STEM Education Link Report

- This report is being created to summarize educational outcomes needed to meet business' STEM talent goals identified through the Business Roundtables (above). **

Florida STEM Plan

- The **STEM*florida*** Education Advisory Group (SF-EAG), a consensus building committee that will synthesize the business and education input, has been created. *
- The Florida STEM Plan, produced by the EAG in 2010, will include strategies to meet the measurable goals and educational outcomes identified by the Business Roundtable and Education Link Reports. **

Annual STEM Educational Conferences

- Held July 25 – 27, the 2010 STEM Educational Conference, is designed to bring the state's diverse STEM stakeholders together to share best practices, leverage collective resources and increase coordination. A second annual conference will be held in 2011. **

STEM*florida* Statewide Multimedia Campaign

- High school-level students compete for an award by submitting multi-media ideas around theme of "U might B STEM if…" with winning submissions to be used for a statewide multi-media campaign. **

STEM*florida* Internship/Externship Program

- 150 student internships and 50 teacher externships created and/or organized to expand real-world understanding of STEM workforce needs **

* Indicates component completed by May 2010   ** Indicates ongoing component that will be completed by June 2011

(b)(6)

P-2: STEM*florida* Plan

Developing an Action Plan for Systemic Reform of STEM Education and Workforce Readiness in Florida

"It is easy to be complacent about U.S. competitiveness and preeminence in science and technology. We have led the world for decades, and we continue to do so in many research fields today. But the world is changing rapidly, and our advantages are no longer unique. Some will argue that this is a problem for market forces to resolve—but that is exactly the concern. Market forces are already at work moving jobs to countries with less costly, often better educated, highly motivated work forces and more friendly tax policies."
-Rising Above the Gathering Storm, 2005

Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future. (2005). Retrieved January 23, 2009, from National Academy of Sciences: http://www.nap.edu/catalog.php?record_id=11463

"If the United States had in recent years closed the gap between its educational achievement levels and those of better-performing nations such as Finland and Korea, GDP in 2008 could have been $1.3 trillion to $2.3 trillion higher. This represents 9 to 16 percent of GDP." "The recurring annual economic cost of the international achievement gap is substantially larger than the deep recession the United States is currently experiencing."

McKinsey & Company. (2009). *The Economic Impact of the Achievement Gap in America's Schools*, p. 6.

Background

In January 2009, after consulting with business and education leaders, Enterprise Florida, Inc. (EFI) released a Discussion Paper on K-12 STEM (Science, Technology, Engineering, and Mathematics) Education. EFI's Action Recommendation was to call for the creation of a Florida STEM Council to "act as a formal conduit for business direction, support, and engagement in STEM education." Simultaneously, FCR-STEM, working with the Florida Chamber, began the process of establishing a task force of business, education, and government representatives to develop a STEM Plan for the State of Florida. In late summer, prior to the first meeting of the task force, Workforce Florida, Inc. (WFI), announced a request for proposals (RFP) to provide $580,000 in support of efforts to improve STEM outcomes in Florida. In order to avoid duplication of efforts and increase the likelihood of developing a STEM Plan that would have a state-wide impact, leaders of the FCR-STEM task force made a decision to collaborate with the Consortium of Florida's Education Foundations and others in responding to the RFP. In October 2009 our joint proposal, STEM*florida*, was selected. Under this proposal, the STEM*florida* Business Steering Council is to be created. This council is the equivalent of the Florida STEM Council described by EFI, above. **Advising this council on a plan to move forward in the creation of a Florida STEM Plan, synthesizing the statewide input from both the business and education communities, will be our STEM*florida* Education Advisory Group.**

Work of the STEM*florida* Education Advisory Group

Our STEM*florida* Education Advisory Group will work collaboratively to produce a **Florida STEM Plan** by December 2010 that will include strategies to:

- address educational initiatives to support existing and prospective STEM based industry;
- increase student enrollment in STEM curricula;
- increase student achievement goals in mathematics and science;
- close the gap between STEM entry-level workforce readiness needs and an available STEM prepared workforce;
- increase the percentage of all Floridians who are literate in STEM content and issues;
- increase postsecondary readiness for 21st Century STEM related careers;
- provide regional educational solutions to regional STEM workforce needs.

This Florida STEM Plan will be created using input from the business and education communities. A series of reports is being compiled to provide us with the most current information on the state of STEM education in Florida, the stated STEM needs of the business community, and evidence-based approaches for addressing those needs. These reports and their release dates are as follows:

- The State of STEM in Florida (Release date: December 2009)
- The STEM*florida* Business Roundtable Report (Release date: July 2010)
- The STEM*florida* Education Link Report (Release date August 2010)

In order to develop perspective broad enough to come to consensus as the Florida STEM Plan is written, we will gather evidence from STEM education research, relevant policy, and other STEM programs, both within and external to Florida. Table 1 includes a sample of STEM

Table 1: A Sample of States' STEM Initiatives

Alabama

Alabama Math, Science, and Technology Initiative
http://www.amsti.org/

Arizona

Arizona Initiative for Math and Science Education
http://educationpartnerships.asu.edu/content/arizona-initiative-math-science-education

Colorado

Colorado Math, Science, Technology, and Engineering Education Coalition http://www.coloradostemeducation.com/

Georgia

Georgia's Partnership for Reform in Science and Mathematics PRISM http://www.gaprism.org/

Pennsylvania

Pennsylvania's STEM Initiative: An initiative of the NGA and the Team Pennsylvania Foundation
http://www.pasteminitiative.org/

Kentucky

Kentucky's STEM Imperative: Competing in the Global Economy http://cpe.ky.gov/committees/stem/

Massachusetts

The Massachusetts STEM Initiative
http://www.massachusetts.edu/stem/index.html

Texas

The Texas Science, Technology, Engineering, and Mathematics Initiative T-STEM http://www.thsp.org/initiatives/t_stem/

From the National Governors' Association report "Innovation America": "Many states have adopted effective innovation practices—if not yet a comprehensive innovation agenda—by making investments in K–12 education and raising science, technology, engineering, and math (STEM) standards; using their role as the main funders of higher education to improve these institutions' production of math and science-related degrees; and linking research and development to key industrial, economic, and labor and skills targets."

From "Innovation America: A Final Report". Retrieved January 23, 2009 from http://www.nga.org/portal/site/nga/menuitem.50aeae5ff70b817ae8ebb856a11010a0 initiatives developed by other states. Table 2 includes a sample of ongoing STEM initiatives in Florida. Additionally, the following Science and Mathematics Education Policy White Paper (www.naeducation.org/Science_and_Mathematics_Education_White_Paper.pdf), released in October 2009 by the National Academy of Education, contains useful recommendations to inform our work.

Table 2. A sample of STEM initiatives in Florida

- Florida Department of Education Office of Mathematics and Science http://www.fldoestem.org
- FCR-STEM http://www.fcrstem.org
- Florida PROMiSE http://www.flpromise.org
- The PRISM Project http://www.theprismproject.org
- FSU Teach http://www.fsu-teach.fsu.edu
- UF Teach http://ufteach.clas.ufl.edu/index.html
- Florida SUMS http://www.nefec.org/floridasums
- Space Florida http://www.spaceflorida.gov
- Enterprise Florida http://www.eflorida.comWorkforce Florida, Inc. http://www.workforceflorida.comFlorida Chamber Foundation http://www.flchamber.com
- Coalition for Science Literacy at USF http://www.csl.usf.edu/

Implementation Plan

The proposed implementation plan in Table 3 was created to help our STEM*florida* Education Advisory Group complete the Florida STEM Plan by our December 2010 target date. During our December meeting we will discuss the scope of work based on this plan.

Table 3. Proposed Implementation Steps for the Creation of the Florida STEM Plan

Implementation Step	Date
Establish the STEM*florida* Education Advisory Group (SF-EAG), a consensus-building committee that will synthesize the business and education input. The Florida STEM Plan will be based on business goals as defined in the STEM*florida* Business Roundtable Report and business partner input.	Oct 2009
Meet with SF-EAG to discuss the scope of work based on the STEM*florida* Implementation Plan, the process, the timeline, and options for participation in developing the Florida STEM Plan.	Dec 2009
Survey SF-EAG members about their top STEM education priorities for Florida in preparation for linkage and support of the business-driven STEM goals.	Jan 2010
Meet with SF-EAG to report the survey results and work toward consensus on priorities.	Feb 2010
SF-EAG will work to develop perspective broad enough, informed by results of research, to come to consensus as the Florida STEM Plan is written. In order to keep informed, regular email updates on advances in STEM education research, relevant policy, and other STEM programs in place that could be utilized to support the business STEM goals will be sent to SF-EAG members.	Ongoing
Representatives from FCR-STEM will attend Business Round Table meetings to understand the context of the statements to be included in the STEM*florida* Business Report and to develop further relationships within the business community to aid in the consensus building process in support of linking education to the business STEM goals.	Jan -March 2010
Meet with SF-EAG to convey the results of the STEM*florida* Business Report and the STEM*florida* Education Link Report. Facilitate discussion about how to best use the input to develop a consensus plan.	Aug 2010
Based on the results of the August meeting, draft an outline of the Florida STEM Plan and post for input.	Sept 2010
Synthesize feedback and revise outline of the Florida STEM Plan accordingly. Reiterate process as needed.	Sept 2010
Based on approved outline of the Florida STEM Plan, create draft of the Florida STEM Plan Report. Post for input.	Oct 2010

Meet with the SF-EAG to revise the Florida STEM Plan. Come to consensus as to any major changes to the draft of the final plan. Post for review.	Oct 2010
Synthesize feedback and finalize the Florida STEM Plan accordingly.	Nov 2010
Present the plan to the Business Steering Council for review and approval.	Early Dec 2010

Composition of the STEM*florida* Education Advisory Group

Tables 4 and 5 contain the members of the STEM*florida* Education Advisory Group (SF-EAG), who are representatives from their respective business, education, and government communities.

Table 4. Executive Committee of the STEM*florida* Education Advisory Group

Sector	Agency/Organization	Representative
Government	Senate	Sen. Don Gaetz
	Florida Department of Education	Frances Haithcock
University	Florida State University University of Central Florida College of Engineering	Laura Lang, Mabry Gaboardi Marwan Simaan
PK-12 Education	Leon County Schools Brevard County Schools	Nancy Stokely Barbara Rodrigues
Innovation Industry Clusters	Banner Centers	Frank Fuller
Foundations/Organizations	Helios Consortium for Florida Education Foundations	Paul Luna, Stacey Carlson Mary Chance
College	Miami Dade College	Eduardo J. Padrón Heather Belmont
Rural Districts	Heartland Consortium Florida Learning Alliance	Tom Connor

Table 5. STEM*florida* Education Advisory Group Membership

Sector	Agency/Organization	Representative
Government, Business and Industry	Florida Dept of Education	Mary Jane Tappen, Kris Ellington
	Senate Select Committee on Florida's Economy	Sen. Don Gaetz
	Agency for Workforce Innovation	Kevin Neal
	Lake County School Board	Evan Lefsky
	Information Technology	Ben Amaba, IBM Shearon Arnott, FLVS Jim Clamons, Harris Corp.
	Aeronautics/Aviation & Aerospace	Mike Gillett, Lockheed Martin
	Manufacturing	Dr. Eric Roe, Manufacturer's Association of Florida
Foundations/Organizations	Orlando Chamber of Commerce	Leslie Heilema
	Florida Chamber Foundation	Tony Carvajal
	Florida Organization of Instructional Leaders	Anna-Marie Cote Seminole County
	Foundation for Excellence in Education	Patricia Levesque
	Helios Foundation	Stacey Carlson
PK-12 Education	Florida Association of District School Superintendents	Bill Montford, FADSS Sam Himmel, Citrus Co. Mike Lannon. St. Lucie Co.
	Florida Association of Science Supervisors	Ginger Davis, Brevard County Schools
	Pinellas County Schools	Rose Mack, Secondary Mathematics Supervisor
	Florida Association of School Administrators	Christi Moss
	Florida State Board of Education	Roberto Martinez
	School Boards	Ginger Littleton, Bay County School Board
Higher Education	Coalition for Science Literacy (University of South Florida)	Gerry Meisels
	Florida Board of Governors	R. E. LeMon Jon Rogers
	Florida Center for Research in Science,	Joe Travis,

	Technology, Engineering, and Math (Florida State University) National High Magnetic Field Laboratory (Florida State University, University of Florida)	Rob Schoen Greg Boebinger, Patricia Dixon

P-3: FCR-STEM FEMALE AND MINORITY INITIATIVE

Female-Minority Initiative

Final Report

February 17, 2009

Florida Center for Research
in Science, Technology, Engineering and Mathematics

Florida State University
Tallahassee, Florida

FCR-STEM
Female-Minority Initiative

About FCR-STEM

The mission of the Florida Center for Research in Science, Technology, Engineering and Mathematics (FCR-STEM) is to engage in research, technical assistance, and dissemination that will (1) contribute to the scientific body of knowledge regarding how students learn science and mathematics, and how this learning is assessed; (2) improve teaching and learning in Florida's STEM classrooms; and (3) increase students' preparation for higher education and careers in the 21st Century. With a focus on improving classroom practice, the center aims to have an impact on the following outcomes:

- Improving student achievement in STEM
- Narrowing student achievement gaps in STEM
- Increasing student pursuit of STEM careers

Funded by the Florida Legislature, FCR-STEM is jointly administered by Florida State University's College of Arts & Sciences, College of Education, and Learning Systems Institute in the Office of the Provost. The center was created in state statute in 2006 and competitively awarded by the Florida Department of Education to Florida State University in February 2007.

FCR-STEM extends sincere gratitude to the Female-Minority Initiative Work Group and Advisory Panel members for their generous contribution of time and expertise to this project and for their impressive dedication to advancing the opportunities and success of females and underrepresented minorities in science, technology, engineering and mathematics.

TABLE OF CONTENTS

OVERVIEW

Purpose of the Female-Minority Initiative

In April 2007, FCR-STEM created the Female-Minority Initiative to address the objective of narrowing student achievement gaps in science, technology, engineering and mathematics (STEM) and respond to authorizing legislation requesting the center to "develop a comprehensive plan, with input from school districts, to increase the number and percentage of females and minority students enrolling in and successfully completing mathematics and science courses" (Florida Statutes, Section 1004.86). FCR-STEM expanded the scope of the plan beyond course-taking to include participation, achievement, and persistence in STEM education and careers from kindergarten through post-secondary education (K-20).

Development of the Plan

In June of 2007, a group of 10 professionals were selected to serve as advisory panel members and recommend participants for a Female-Minority Initiative Work Group that would develop the final plan. Also, the FCR-STEM project team, led by Project Manager, Faye Jones, began preparation of two documents to guide the Work Group's recommendations.

1. A summary of trends in female and minority STEM course-taking, achievement and degree attainment from K-12 through postsecondary education in Florida (See Appendix A).

2. A literature review, based on peer-reviewed journal articles, to aid in understanding the participation, choice, and persistence of females and underrepresented minorities in STEM from the elementary grades to postsecondary education (See Appendix B).

The Advisory Panel convened in Spring 2007 to help guide the process for developing the plan and identify K-20 education, research, and business stakeholders for the Work Group. Based on the Advisory Panel's input, a diverse Work Group of 37 members was selected, including representatives of Florida's school districts, community colleges, universities, businesses, Department of Education, and several STEM initiatives outside Florida (See Appendix D).

The Work Group held two 1-1/2-day meetings in Orlando. On November 13-14, 2007, members began to examine policies, programs and strategies that hold promise for increasing Florida's female and minority representation in STEM courses and STEM fields. After being presented with a summary of the literature review and data trends, members were asked to examine and answer the following question: *Which of the recommendations from the literature review and your own experiences show promise for increasing Florida's female and minority representation* *in STEM courses and STEM fields?* This question was addressed in small groups first by region (North Florida, Central Florida, and South Florida) and then by school level (i.e., elementary, middle, high school, and post-secondary education). FCR-STEM small group facilitators digitally recorded all discussions and documented the recommendations in writing. The Work Group met again on May 22-23, 2008 to (1) examine Logic Models describing how Florida could close gender, racial, and ethnic gaps in STEM, (2) review and edit recommendations from the November 2007 meeting, and (2) identify potential measures of the plan's success (see Appendix C).

Summary of the Plan

Goal 1: Increase student interest and awareness

Recommendation 1: Launch media and outreach campaigns to raise student awareness of STEM careers.

Recommendation 2: Strengthen STEM-related counseling and advising.

Recommendation 3. Increase awareness and access to financial aid for college, particularly in STEM majors.

Goal 2: Improve STEM instruction

Recommendation 4: Implement research-based instructional strategies in K-12 mathematics and science.

Recommendation 5: Increase the rigor and relevance of course offerings.

Recommendation 6: Reduce the overemphasis on textbooks and increase the diversity of instructional approaches.

Recommendation 7: Eliminate tracking of students into less rigorous coursework.

Recommendation 8: Help minorities enroll and succeed in advanced STEM courses.

Recommendation 9: Establish systems to monitor student progress and provide help to struggling students.

Recommendation 10: Implement strategies to increase STEM participation and success at the postsecondary level.

Goal 3: Build school capacity to improve STEM education

Recommendation 11: Attract quality STEM teachers to high-need schools.

Recommendation 12: Provide cultural competency training to K-20 teachers and administrators.

Recommendation 13: Identify and implement successful approaches to K-12 math/science teacher preparation and professional development.

Recommendation 14: Increase incentives for K-12 teachers to complete high-quality professional development.

Recommendation 15: Develop a STEM-focused alternative certification program.

Recommendation 16: Provide professional development to K-12 school leaders in order to improve their understanding of and support of high quality science and mathematics teaching.

Goal 4: Engage business and the broader community

Recommendation 17: Evaluate the success of existing out-of-school and afterschool programs focusing on STEM.

Recommendation 18: Identify possible roles for parents, communities, industry, and government in attracting students to STEM careers.

Recommendation 19: Develop more partnerships to strengthen K-12 instruction.

Goal 5: Make Informed Policy Decisions

Recommendation 20: Require "diversity impact studies" to guide budget reductions by school districts, community colleges and state universities.

Recommendation 21: Create a board of industry representatives for lawmakers to consult when making decisions that will affect workforce education and preparation specifically in STEM fields.

RECOMMENDATIONS OF THE FEMALE-MINORITY WORK GROUP

Goal 1: Increase student interest and awareness

Recommendation 1: Launch media and outreach campaigns to raise student awareness of STEM careers. With science literacy in mind, the group considered all students the target audience for this recommendation. Several different types of activities were suggested:

1. **Identify existing promotional and marketing materials that positively portray young people, particularly females and minorities, in STEM careers.** The campaign should be based on evidence of strategies that work. Possible media outlets and resources to consider include:
    - NASA materials, such as a film showing interviews with kids.
    - Short videos called "Futures" featuring females/minorities in STEM careers.
    - Information/materials on the National Action Council for Minorities in Engineering website (www.nacme.org).
    - Hispanic and African American media outlets. Advertisement during events that are frequently viewed by women, minorities, and the general population might also be effective (i.e., Golf, Tennis, Tyler Perry, Football, American Idol, Dancing with the Stars).
    - U2 videos, the Design Squad, ipods, Internet, and other media that make it "cool" for students to pursue STEM.
    - The Southern Regional Education Board (SREB) and Southern Governors' Association received a Gates Foundation grant several years ago to launch media outreach campaigns designed to motivate all students to complete high school well-prepared to enter postsecondary education or the workforce. One component of this initiative, SREB's Go *Alliance,* helps member states share expensive media materials and run more effective campaigns promoting college awareness, access and attendance among underrepresented minorities (see http://www.collegeaccessmarketing.org/goalliance/default.aspx).
    - Existing organizations, such as Enterprise Florida, Space Florida, and Workforce Florida, Inc., to help organize or support media campaigns.
    - The ACT's online program tools through Discover to aid in raising awareness of STEM jobs. See website at http://www.act.org/discover/overview/index.html
    - Public announcements, including a State of STEM address to increase public awareness and understanding of the importance of STEM, the consequences of low achievement in STEM, the gender and racial/ethnic disparities in STEM, and solutions for closing the gaps.

2. **Target outreach for specific groups** of students such as those eligible for free/reduced price lunch and first generation college students. Find ways to attract and sustain female interest in science and mathematics. The appeal of science and math for females needs to be addressed from kindergarten through the university level. For females, it appears to be a question of keeping interest in science alive, rather than a question of ability or academic achievement.

3. **Provide students time, materials and facilities** related to STEM education and exploration of STEM careers, taking advantage of field trips, interactive exhibits, videos, laboratory workshops, and other programs at venues outside the school setting such as:
   - Museum of Science and Industry (Tampa) (http://www.mosi.org/)
   - The Orlando Science Center (http://www.osc.org/Index.aspx)
   - Boston Museum of Science – materials to train counselors and teachers; career books for children (http://www.mos.org/exhibits_shows)
   - The National Center for Quality AfterSchool Training Toolkit which provides examples of how to engage students in science, technology, math, arts, and literacy programs after school (http://www.sedl.org/afterschool/)

4. **Encourage STEM outreach at the postsecondary level.** Examine programs in Florida and other states that have been successful in attracting females and underrepresented minorities to STEM or STEM-related majors. Also, increase incentives and opportunities for tenured and tenure-track faculty to take a proactive role in recruiting and engaging students in STEM courses and majors, through teaching, research and service. Increase STEM faculty awareness of diversity by requiring them to report the number and percentage of female and traditionally underrepresented minority students engaged in their research projects.

Recommendation 2: Strengthen STEM-related counseling and advising.

1. **Staff schools with guidance or career counselors at all levels** (elementary, middle and high school) in ratios appropriate to the student population.

2. **Encourage universities to work with elementary and secondary school counselors.** For example, Florida International University's College of Engineering provided workshops that exposed counselors to different engineering disciplines. The Florida Partnership for Minority and Underrepresented Student Achievement, a joint initiative of the College Board and the State of Florida, provides a forum to address how students could be better advised on coursetaking and prepared for postsecondary success. The partnership's activities, which currently includes a counselor leadership conference, might be tailored or expanded to specifically address STEM.

3. **Increase use of career counseling tools and resources**, such as the electronic Personal Education Planner (ePEP) and other tools on the FLDOE career planning website, www.facts.org. Some tools are already in place but need to be used more widely. Career counselors, especially in high school, should be aware of financial resources and grants available to students pursuing STEM education. For example, the National Science and Mathematics Access to Retain Talent Grant, also known as the National SMART Grant (see http://studentaid.ed.gov), provides up to $4,000 per year to full-time undergraduates, who are in their third and fourth years of study, are eligible for federal Pell Grants, and are majoring in physical, life, or computer sciences, mathematics, technology, or engineering.

4. **Help STEM teachers become more like advisors.** They need to be sufficiently knowledgeable to talk to students about college and STEM careers.

5. **Engage older students in mentoring younger learners.** For example, the National Science Foundation Graduate Teaching Fellows in K-12 Education (NSF GK-12) Program (http://www.nsfgk12.org/) provides fellowships and training to graduate students in STEM fields who work in K-12 schools in a mentoring or supportive role. The purpose is to improve their communication and teaching skills while enriching STEM content and instruction for their K-12 partners. With an NSF grant, the University of South Florida's College of Engineering is creating learning communities for students through a three-tiered mentoring ladder involving faculty mentors, upper-level undergraduates, and graduate students (see http://www2.eng.usf.edu/news/kumar-nsfrnr.asp).

6. **Utilize workforce development (e.g., Workforce *plus)* counselors to familiarize students with careers.**

Recommendation 3: Increase awareness of and access to financial aid for college, particularly in STEM majors. Ensure that females and underrepresented minorities are aware of Bright Futures Scholarships, access to at least one free PSAT exam, and dual enrollment programs at universities. Consider a state-funded scholarship for university students seeking STEM degrees. For example, an extra $1500 per year in financial aid might lure more students. This strategy has been adopted in South Carolina, but no results have been reported to date. The University of Florida reportedly tried this approach at the institutional level but it was viewed as "giving other majors less."

Goal 2: Improve STEM instruction

Recommendation 4: Implement research-based instructional strategies in K-12 mathematics and science. The Work Group recommended doing for math and science what *Reading First* did for reading in the elementary grades. It was predicted that this would be more challenging in mathematics and science than in reading because of the number of different content areas (life sciences, physical sciences, etc.).

1. **Systematically study the effectiveness of STEM education in elementary, secondary, and postsecondary schools in Florida.** One approach is to conduct a *Beat the Odds Study* targeting high minority schools in Florida to answer the following question: *How do Florida schools where minorities "beat the odds" (i.e., perform at higher levels than predicted based on socioeconomic and other factors) differ from Florida schools where minorities do not "beat the odds" ?* The intent of this study would be twofold: (1) to identify STEM-related policies and practices in Florida's schools and school districts that appear to have promise in increasing the participation and success of minorities in STEM education, and (2) to subsequently test their effectiveness through rigorous evaluations. The initial focus would be mathematics achievement in elementary schools serving a substantial number of minorities underrepresented in STEM (i.e., Blacks and Hispanics). In later years, this study could be extended to middle and high school mathematics and to science at all levels. Similar studies have been conducted in other states such as Arizona and Washington.
2. **Examine key recommendations from national organizations serving females and minorities.** Two organizations of particular relevance are the (1) National Action Council for Minorities in Engineering (NACME) which has a number of suggestions on its website (www.nacme.org) and sponsors programs and events designed to attract minorities to engineering, (2) SECME which hosts programs beginning in the early grades that encourage minorities and underserved youth to study STEM in college. The following organizations also have provided recommendations: Ecological Society of America (ESA), The National Association of Multicultural Engineering Program Advocates (NAMEPA, Inc.), Student Conservation Association (SCA), The National Society of Black Engineers (NSBE), National Organization of Black Chemists and Chemical Engineers (NOBCHE), Society of Women Engineers (SWE), National Society of Hispanic Engineers (NSHE), and the National Association of Mathematicians (NAM).
3. **Support interdisciplinary collaborations.** Provide opportunities for student exposure to multiple STEM disciplines (e.g., chemistry and engineering). For example, at some universities, departments (e.g., chemistry and engineering) share graduate students as teaching assistants for STEM courses.

Recommendation 5: Increase the rigor and relevance of course-offerings.

1. **Determine the most feasible way to increase mathematics and science course-taking requirements** at the high school level so that students take at least four years each of math and science and reach at least Algebra II in mathematics by graduation. *Revisited*, a longitudinal study by the National Center for Education Statistics tracking the 1988 cohort of U.S. 8^{th} graders through 2000 provides data on course-taking associated with

success in postsecondary education. The data, however, are primarily correlational; a cause-and-effect relationship between increased requirements and postsecondary success has not been established. Also, the feasibility of implementing such requirements needs to be carefully considered in order to minimize implementation barriers (e.g., lack of well-qualified teachers) and possible unintended consequences (higher drop-out rates).

2. **Offer capstone courses in high school** that illustrate the application of STEM in real world and career settings. These courses would be an option for students who think Advanced Placement (AP) courses aren't "cool" or do not plan to attend college immediately after graduation. Hands-on experiential learning was suggested as a strategy to increase the relevance of instruction in grades K-12.

Recommendation 6: Reduce the overemphasis on textbooks and increase the diversity of instructional approaches (e.g., rotating students from large groups to laboratories and small problem-solving groups; use of manipulatives; and hands-on, minds-on activities, including science labs.) The Miami-Dade school district is preparing packets and laboratory activities to enhance science instruction, as a supplement to existing textbooks and guides. Other examples include: (1) Supplementary science and math resources such as Great Explorations in Math and Science or GEMS at the University of California-Berkeley, (2) I LOVE Science (Increasing Local Opportunities for Volunteers Enthusiastic about Science) created by a partnership between Gulf Power Company, Florida Institute for Human and Machine Cognition (IHMC), former state Rep Holly Benson, and the Escambia and Santa Rosa County School Districts, and (3) the MOVE IT Math (MIM) program by Project GRAD USA Mathematics.

Recommendation 7: Eliminate tracking of students into less rigorous coursework. Eliminate low track courses such as Informal Geometry and Algebra IA/IB. Identify "weed-out" courses and provide support to students struggling in these courses. Do not isolate students based on language. STEM courses and activities should be structured to remove barriers and include students with limited English Proficiency. Testing accommodations will help these students to some extent, but they also will need help in their native language with technical vocabulary in science and mathematics, which may be unfamiliar or confusing to their parents.

Recommendation 8: Help minorities enroll and succeed in advanced STEM courses.

1. **Evaluate existing programs in Florida and other states and identify those that might be scaled up.** Examples include:
    - **AVID** (Advancement Via Individual Determination): Miami-Dade is currently piloting this program, which begins in grade 4 and extends through middle and high school. It includes rigorous coursework school-wide, tutoring in Socratic

methods, writing as a tool for learning, study groups, and exposure to the wider world through attendance at stage plays, museums and places of professional employment. Although taught by different teachers, each middle school student has a single teacher responsible for him/her. A major target group for this program is "middling" or "C" students who regularly attend school and do not have serious discipline problems. Other Florida districts, such as Brevard and Hillsborough, also have been implementing this program. (See http://www.avidonline.org/)

- **Dual community college and university degree programs**: Florida International University (FIU) operates a program specifically for students who are not admitted to FIU immediately after high school graduation, but who would be automatically eligible for admission upon successful completion of an AA degree at a community college within 3 years. Upon entry to the community college, the program builds the student's psychological connection with the university, for example, by giving them an FIU ID card, access to the FIU library, discounts for football game tickets. Findings to date indicate better results for these dual degree program participants compared to those students who were offered but did not accept this opportunity.

2. **Examine proper designation of advanced courses.** The Work Group raised concern about use of the terms "Pre-Advanced Placement (Pre-AP)" versus "Honors" in naming high school courses, and the differential impact these designations may have on student enrollment in AP courses. The term "pre-AP" may encourage students to enroll in AP courses, whereas the term "Honors," by signifying excellence that may not be on par with AP courses, may deter students from taking AP courses. Proper designation and description of courses also is needed at the university level to help students pursue STEM careers, particularly in information technology.

3. **Encourage school administrators to monitor the number of females and minorities in higher level courses** and consult with teachers and parents about the possible reasons for low female and minority enrollments (if any) and how they might be increased.

Recommendation 9: Establish systems to monitor student progress and provide help to struggling students. Such a system would have academic interventions at mid-term for those with borderline or poor performance. For example, at the university level, University of South Florida students receive mid-term grades and are required to see an advisor and counselor if performance is below an acceptable threshold. Conduct surveys on student attitudes towards STEM that could identify school, home and peer factors that influence students' STEM choice and persistence in high school and their transition into college and the workforce. The Michigan Study of Adolescent and Adult Life Transitions or MSALT provides a good model to follow.

Recommendation 10: Implement strategies to increase STEM participation and success at the postsecondary level.

1. **Implement research-based remediation strategies.** Recent studies by the Florida Legislature's Office of Program Policy Analysis and Government Accountability (OPPAGA, Report No.07-31) and Association of State Colleges and Universities *(Enhancing college student success through developmental courses)* indicate that successful completion of college preparation programs and developmental coursework can improve degree attainment. The OPPAGA report notes that although research-based strategies exist, they are implemented unevenly by community colleges.

2. **Improve vertical integration of mathematics and science education from K-20.** To enhance student success and reduce the need for remediation, the workgroup advised better alignment of STEM coursework and instruction from K-12 to the postsecondary institutions and from community colleges to universities.

3. **Implement strategies to enhance attainment of bachelor's and advanced degrees.** Consider pre-major STEM degrees (similar to pre-law or pre-med programs). Examine the possibility of extended five-year master's degree programs in STEM fields that afford students the opportunity to increase their preparation for master's level coursework.

4. **Increase research experiences** for grade 3-12 students and undergraduates in order to engage students in the work of scientists in various STEM fields.

5. **Find ways to retain STEM college and university majors in STEM or STEM-support fields.** When students drop a particular STEM major, provide a mechanism to redirect them to another STEM or STEM-support field for which they may be better suited. Encourage STEM learning and community living centers at universities to increase student experience with and exposure to STEM fields and facilitate interaction among students with similar STEM interests.
6. **Consider English proficiency courses for professors in STEM fields.** At Florida International University, accent reduction courses are given to professors when student evaluations indicate that teachers are difficult to understand.

Goal 3: Build school capacity to improve STEM education

Recommendation 11: Attract quality STEM teachers to high-need schools.

1. **Review and evaluate the effectiveness of incentive programs** in Florida and other states which aim to attract and retain practicing teachers at Title I or other low SES schools.

2. **Utilize incentives to attract pre-service teachers to high need schools.** Examples include (1) federal Teacher Education Assistance for College and Higher Education (TEACH) Grants that provide up to $4,000 per year to students who agree to teach in a public or private elementary or secondary school that serves students from low-income families, and (2) the Florida Fund for Minority Teachers, established in 1999 by the Florida Legislature, which provides $4,000 scholarships to eligible African-American, Hispanic-American, Asian-American, and Native American juniors enrolled in a teacher education program at one of Florida's public or private universities. These scholarships can be repaid by being employed as a Florida public school teacher for one year for each year the scholarship was received.

3. **Broaden teacher recruitment efforts for high need schools** via local universities such as Colleges of Education, Arts and Sciences, and Engineering. Expand efforts to recruit career changers with STEM backgrounds into mathematics and science teaching. Arrange more internships for pre-service teachers in high-need schools and at schools with critical shortages of mathematics and science teachers.

Recommendation 12: Provide cultural competency training to K-20 teachers and administrators. It is important for teachers to be aware of actions that may unfairly track minority/female students or restrict them from getting into upper level classes. Also, leaders must be able to foster cultural competency among teachers and create a comfort zone that will enable people to have open conversations about race. Both teachers and administrators must understand the unique cultural aspects of minority populations that may dissuade students from pursuing STEM careers. For example in the Hispanic culture, females may have deeply rooted roles that differ from those of males. Parents may be reluctant to encourage their children to enter unfamiliar fields or to live far away from home. The Anchin Center at the University of South Florida (USF) has incorporated cultural competency training into professional development for science educators. The National School Reform Faculty Protocols provide guidance on how to have difficult conversations with faculty about race and other issues. Some school districts, such as Hillsborough and Pinellas, have provided cultural competency training on a broad scale. At the university level, cultural competency training (like sexual harassment training) could be required for faculty.

Recommendation 13: Identify and implement successful approaches to K-12 math/science teacher preparation and professional development. Both content and pedagogy (strategies for teaching content) need improvement at all levels. With grants from the National Math and Science Initiative, two Florida universities (University of Florida and Florida State University) are replicating and evaluating the impact of the UTeach teacher preparation program at the University of Texas-Austin. This program was designed to dramatically increase the number of well-qualified mathematics and science teachers at the secondary level. For practicing teachers, the Work Group suggested that professional development follow a professional learning community model and engage teachers in Lesson Study (an approach in which teachers are convened to discuss how to teach a particular lesson, develop a script, observe each other teach, and refine the lesson accordingly).

Recommendation 14: Increase incentives for K-12 teachers to complete high-quality professional development. One option is to examine in-service points for recertification and place greater emphasis on STEM content. Incentives could be provided for teachers to complete courses/degrees at universities. Some universities, such as Florid State University, offer practicing science teachers the option of earning a master's degree online and summer programs, such as Research Experiences for Teachers (RET) that pay teachers stipends to work with scientists.

Recommendation 15: Develop a STEM-focused alternative certification program, possibly integrated with other programs, such as MINT (Mentoring and Induction for New Teachers) directed by the Miami-Dade County School District.

Recommendation 16: Provide professional development to K-12 school leaders in order to improve their understanding and support of high quality science and mathematics teaching.

Goal 4: Engage business and the broader community

Recommendation 17: Evaluate the success of existing out-of-school and after-school programs focusing on STEM. The Northwest Regional Educational Laboratory published a literature review on the importance of afterschool literacy programs for the National Partnership for Quality Afterschool Learning. It was suggested that a similar literature review be conducted on STEM afterschool and outreach programs incorporating the programs below.

Examples:

- **SECME.** Established in 1975 as the Southeastern Consortium for Minorities in Engineering by the engineering deans at seven southeastern universities, this organization sponsors programs for students, teachers and parents with the aim of increasing the numbers of underrepresented and underserved students who want to study science, mathematics, engineering and technology in college. SECME's programs start as early as pre-kindergarten and extend through high school (see www.secme.org). The Georgia Institute of Technology would have data on the success of this program. The Miami-Dade school district, University of Miami and Florida International University also have been involved in SECME initiatives.

- **California MESA** (Mathematics Engineering Science Achievement). Established in 1970 and administered by the State of California, MESA is an academic development program that supports educationally disadvantaged students in math and science studies at the university level and their attainment of math-related degrees in engineering, science and technology. The program is funded by the state legislature, corporate contributions and grants (see http://www.ucop.edu/mesa/home.html).
- **Upward Bound Math-Science (UBMS).** In 1990, the U.S. Department of Education established a math and science initiative within Upward Bound, designed to provide disadvantaged high school students with skills and experiences to help them succeed in college. The UBMS initiative awards grants to colleges and universities to provide (1) hands-on experience in laboratories, computer facilities, and at field sites, and (2) opportunities to learn from mathematicians and scientists at host institutions. An evaluation of student transcripts collected between 1998 and 1999 and again from 2001 to 2002 indicated that UBMS improves several student outcomes in high school and college, and increases the odds of majoring in math or science (Olsen et al, 2007).
- **Summer STEM programs and academies for students.** These experiences appear to increase students' interest in STEM. A variety of these programs are offered by Florida's universities. Examples include "Expanding Your Horizons" a STEM-related program for middle school girls sponsored by the University of Central Florida's College of Engineering and Computer Science, "Saturday-at-the-Sea" sponsored by Florida State University's College of Arts & Sciences, and "Science Students Together Reaching Instructional Diversity & Excellence" (SSTRIDE) sponsored by Florida State University's College of Medicine. At Florida International University, the College of Engineering conducts outreach programs during the school year and summer months to prepare young students in science, technology, engineering, and mathematics.

Although the following programs are not STEM-specific, they offer opportunities for promoting STEM education and careers to female and minority students.

- **Engaging Latino Communities for Education (ENLACE).** Launched nationally by the W.K. Kellogg Foundation in 1999, ENLACE (Engaging Latino Communities for Education) builds educational partnerships to identify and eliminate the barriers to educational success in higher education for diverse under-represented students. The W. K. Kellogg Foundation has funded a joint proposal by Florida International University, University of South Florida , Florida Atlantic University, and the University of Central Florida over three years to support ENLACE FLORIDA. This project will develop and implement solutions eliminating barriers to educational success, examine best practices in Florida and the nation and advocate for policies designed to improve educational achievement for Hispanic students and other under-represented groups in Florida's K-20 system. (See http://www.cec.fiu.edu/news/CEC_News_ENLACE.htm)

- **College Reach-Out Program (CROP).** Funded by the Florida Department of Education, this program has served over 112,000 students since 1990. Blacks comprise the largest group served (72%); also, females (61%) outnumber males. The program starts at 6th grade and runs through graduation. Results to date show that 85% of seniors in the program graduate from high school with a standard diploma and 72% of graduates enter postsecondary institutions. Most of the state's community colleges and state universities plus 4 private institutions participate. Districts sign agreements with participating postsecondary institutions. For more information see http://www.fldoe.org/eeop/crop.asp.
- **"High Schools That Work."** High Schools That Work is the largest and oldest of the Southern Regional Education Board's school improvement initiatives for high school and middle grades leaders and teachers. More than 1,200 *HSTW* sites in 32 states participate. (See http://www.sreb.org/programs/hstw/hstwindex.asp.) This national academy model is being implemented in all high schools in Miami-Dade, which have focused on the following themes: Health Sciences, Finance, Law, Digital Technology, among others.
- **GEAR UP (Gaining Early Awareness and Readiness for Undergraduate Programs).** This federally-funded grant program is designed to increase the number of low-income students who are prepared to enter and succeed in postsecondary education. It provides six-year grants to states and partnerships to provide services to students at high-poverty middle and high schools. Entire cohorts of students are followed from middle to high school. GEAR UP funds also provide college scholarships to low-income students. There are four GEAR UP projects in Florida (See http://www.ed.gov/programs/gearup/index.html.

In examining and assessing the effectiveness of these programs, the Work Group suggested comparing them on a given set of characteristics (e.g., parental support) and looking for common characteristics that define successful programs, recognizing that no one particular model should be expected to work in all contexts.

The Work Group also suggested examining programs designed to help students develop skills and coping strategies (persistence, time management, study habits) necessary for the transition from high school to college and graduate school. Examples of these programs are freshman First Year Experience (FYE) courses, the Ronald E. McNair Post-baccalaureate Achievement Program (a federal TRIO program) for underrepresented minorities, the National Science Foundation's Louis Stokes Alliance for Minority Participation or AMP program to help underprivileged minorities in STEM, and summer bridge programs.

Recommendation 18: Identify possible roles for parents, communities, industry, and government in attracting students to STEM careers.

1. **Help students find mentors or supportive adults** who can guide their education and development. The national Hispanic Dropout Project established by the U.S. Department of Education in 1995 identified the importance of social networks and supports: Students must have parents who know what it takes to succeed or a supportive relationship with a member of the school staff.

2. **Disseminate information to parents about how to support their children's STEM education and choice of STEM careers.**
   The Work Group noted that parents are a huge lever for Hispanic students. Hispanic families are very close-knit (70% to 80% of Florida International University students live at home) and are reluctant to see their children leave home for employment elsewhere. These concerns should be addressed in communications with parents and students about STEM careers, for example, by describing where people with STEM degrees work locally. Family-centered math and science activities also were mentioned as options for communicating with parents about STEM education and careers. Examples include the (1) Everyday Mathematics Center funded by the NSF to support educators, parents, and students who use Everyday Mathematics, (2) Figure This! Math Challenges for Families, (3) MAPPS (Math and Parent Partnerships) in the Southwest, and (4) STEM Family Nights.

2. **Examine various avenues for outreach** such as churches, community centers, fraternities and sororities, neighborhood functions, ethnic festivals, Math/Science at the Mall, Spanish language talk shows, the Miami-Dade parents academy, parent resource rooms (currently at all Miami-Dade schools), 100 Black Men, and town hall meetings hosted by Miami-Dade school board members (which typically have a large turnout). Providing outreach to American Indian students and families would require building trust, perhaps through meetings with tribal leaders, and a message that resonates with their culture, including a connection to the land.

3. **Better inform parents of financial aid options for college**, such as Bright Futures Scholarships, free PSAT exams for students, the Florida International University's dual enrollment program with community colleges (described on pp. 12-13). The poor are less willing to take on debt than middle and upper income families. The subprime mortgage crisis and economic downturn is likely to exacerbate this problem.

4. **Engage school administrators, school board members and business/industry in outreach.** Prepare a kit with data and materials that will equip them to tell the story. Develop relationships with organizations such as Disney, Scripps, NASA, and the National High Magnetic Field Laboratory.

5. **Find out what businesses are doing to attract females and minorities into STEM education and STEM fields.** The group discussed two related activities: (1) setting up a database for matching students with business internships, and (2) starting a state recognition program for business initiatives. It also was suggested that Workforce Florida target STEM Education as one of its target industries and partner with K-12 and postsecondary institutions to align STEM education with industry needs.

Recommendation 19: Develop more partnerships to strengthen K-12 instruction. Involve business and industry in providing professional development for K-12 teachers for example, by sponsoring a teacher or engaging teachers in R&D activities. Some corporations in Florida, such as Lockheed-Martin, have been involved in these efforts. Florida PROMiSE is an example of a statewide professional development partnership of universities and school districts recently funded by the Florida Department of Education with federal monies. Partnerships in other states, regions or districts might inform how partnerships can accomplish different purposes and meet local or regional needs. The state should consider (1) competitive funding of partnerships among one of more districts and a university, and (2) tax and other incentives for STEM-related industries in Florida to recruit and mentor female and minority students.

Goal 5: Make Informed Policy Decisions

The Work Group believed that increasing and sustaining policymakers' support for STEM education is critical to any plan to increase the participation and success of females and minorities. They suggested enlisting the support of female and minority legislators and involving STEM-related businesses and industry in lobbying for improving student financial aid, programs, and initiatives.

Objective 20: Require "diversity impact studies" to guide budget reductions by school districts, community colleges and state universities. The purpose of these studies would be to assess the expected impact of budget cuts under consideration on females and minorities before the decision is made. The Work Group's concern was that administrators or decision-makers, in response to state budget cuts, are eliminating or reducing funding for specific programs or services without awareness of the differential impact these actions will have on female and minority students. For example, decreasing the number of community college transfers to a university could have a disproportionate impact on the admissions of females, Blacks and Hispanics.

Objective 21: Create a board of industry representatives for lawmakers to consult when making decisions that will affect workforce education and preparation, specifically in STEM fields.

ACTIONS SUPPORTED BY RESEARCH

It is imperative that policymakers and educators at the state and local level are aware of evidence-based solutions to improve the educational outcomes of female and minority students. These outcomes include participation, achievement, choice, and persistence in STEM courses, majors, and careers -- including narrowing of the gender and racial gaps in these areas. The purpose of this section is to outline interventions (i.e., programs, policies and other strategies) that target these outcomes and are supported by research in mathematics and science education, sociology, economics, and psychology.

The interventions fall into two categories: (1) *universal interventions* intended for all students, and (2) *targeted interventions* focused on specific student populations. According to Willms (2006), universal and targeted interventions are critical to improve the educational outcomes of all students while narrowing the inequalities between female and male students, minority and white students, and students from low and high socioeconomic status (SES) households.

Levels of evidence

Educators are faced with a wide variety of options when choosing interventions to implement in their schools and classrooms. Before investing time and resources in a course of action, however, it is important to consider the weight of the evidence supporting an intervention's effectiveness. Some, despite widespread use, have not been tested at all. Others have been evaluated or researched but with varying levels of scientific rigor.

According to the Coalition for Evidence-Based Policy (2003), randomized controlled trials, in which program participants are randomly assigned to treatment (intervention) and control groups, provide the strongest evidence of effectiveness. Random assignment maximizes our ability to eliminate factors other than the intervention as an explanation for a program's effect. It gives us a high degree of confidence that the groups vary in only one respect -- the intervention -- not in prior levels of achievement, demographics or other characteristics that we are not able to observe or measure. Without random assignment, it would be very difficult to separate the effect of the intervention from the characteristics of the participants.

Studies with well-matched control and comparison groups, although not as conclusive, can provide a moderate level of evidence. For example, students in treatment and control groups might be matched on prior achievement, race, and socioeconomic status. Matching, however, cannot eliminate rival explanations of a program's effect that might be attributable to other factors or individual characteristics, such as personal motivation or family encouragement, that are difficult to measure.

Correlational research describes the direction and strength of a relationship between two variables. For example, the number of advanced mathematics courses taken in high school is positively correlated with postsecondary success. High levels on the first variable are associated with high levels on the second. However, correlation is not causation. Higher student achievement could be due to factors other than course-taking. For example, advanced mathematics courses may tend to be offered in high schools where students' parents have high incomes and educational levels. Also, students encouraged or motivated to enroll in advanced mathematics courses are likely to be high achievers. Correlational research can help design interventions that can be subsequently tested through causal research, but it cannot be the basis for cause-and-effect conclusions.

When discussing interventions, this report will distinguish between findings that are supported by causal versus correlational research. The latter are abundant in the research literature, and must be interpreted with caution.

Universal Interventions

The objective of universal interventions is to improve the educational outcomes (i.e., participation, achievement, choice, and persistence) of all students within the schooling system regardless of race, gender, SES, level of achievement, or other individual characteristics (Willms, 2006). Universal interventions are system-wide reforms applied uniformly and consistently within all school districts and across all schools. Typically, these reforms either modify the curriculum, instructional techniques of teachers, or the structure of the school (Willms, 2006). In the context of the aims of the Female-Minority Initiative, universal interventions represent reforms that specifically occur in the classroom and modify teacher behavior and classroom instructional practices related to STEM. These reforms benefit all students including females and minorities. Below is a list of universal interventions based on causal and correlational research as well as recommendations from the Female-Minority Initiative work group.

Praise the STEM effort of students. Causal research indicates that students have positive beliefs about their STEM abilities when teachers praise their efforts instead of praising their abilities, and when teachers help students understand that intelligence is incremental and malleable based on their efforts and learning. Students with these beliefs maintain stronger learning goals, use effort-based strategies to respond to challenges or failure (e.g., persist on challenging tasks), exhibit higher STEM achievement, take more STEM courses, and are more likely to choose STEM majors in college (Mueller & Dweck, 1998; Blackwell et al., 2007).

Use instructional activities that arouse greater student interest in STEM. Causal research indicates that students have greater interest and achievement in STEM when teachers contextualize, personalize, and diversify instruction with multimedia, technology-assisted instruction, hands-on inquiry, project-based learning, and small within-classroom student groupings that facilitate learning (Parker & Lepper, 1992; Cordova & Lepper, 1996; Renninger et al., 2002; Schneider et al., 2002; Turner & Lapan, 2005; Bottge et al., 2007; Randler & Hulde, 2007).

Provide motivational support and feedback to students. Correlational findings suggest that motivational support and frequent, elaborative, positive, and helpful feedback from teachers has a strong and positive relationship with increases in student motivation in STEM (Turner et al., 2002; Schweinle, Turner, & Meyer, 2006).

Targeted Interventions

Targeted interventions are policies, programs and other activities designed to improve the educational and non-educational outcomes of specific and selected populations, such as females, minorities, students with disabilities, students with limited English proficiency, and students from low-income families. There are three types of targeted interventions (Willms, 2006). In some circumstances, they overlap in terms of selected population or desired outcomes.

- *SES-targeted interventions* provide specialized instructional resources to improve the educational outcomes of students from selected households (e.g., minority, low-income)
- *Performance-targeted interventions* seek to improve the educational outcomes of students by providing special instruction, curriculum, or resources to targeted students based on their levels of academic achievement.
- *Compensatory interventions* indirectly improve the educational outcomes of students by providing economic resources directly to the household.

Below is a list of targeted interventions that show promise based on correlational research. No causal research evidence on targeted interventions was found.

Create incentives for the hiring and retention of experienced, effective mathematics and science teachers in low-performing schools that often serve a high proportion of minority and low-income students. Correlational findings indicate that minority, low SES, or low achieving students are more likely to have inexperienced and ineffective mathematics and science teachers (Sanders & Horn, 1998; Clotfelter et al., 2005).

Provide more gift aid to minority and low SES students, and better inform these students of available financial aid. Correlational research suggests that student selection, participation, and persistence in STEM courses and majors correlate with the amount of gift aid available at higher education institutions (Bettinger, 2004; Hu, 2008).

Encourage parents of minority students to have greater involvement in the STEM education of their children. Correlational findings suggest that minority students with parental involvement, despite coming from lower income households, have STEM achievement as high as White students with similar levels of parental involvement (Yan, 1999; Jeynes, 2003).

LOGIC MODELS

Logic models identify the contexts, inputs, outputs, and activities and how they are expected to produce desired outcomes:

- Increased STEM learning and achievement
- Increased selection of STEM majors and careers
- Greater persistence in STEM majors and careers
- Narrowed gender and racial/ethnic achievement gaps

For this project, two logic models were prepared. The practitioner model thinks theoretical elements supported by the Female-Minority Initiative Work Group. The research-based logic model shows linkages between elements that are supported by causal research.

The Practitioner-Based Logic Model presents the perspective of practicing teachers, administrators, university faculty and other Work Group members on inputs, activities and outputs that will lead to desired outcomes. The inputs (i.e., stakeholders, major players, or guidelines) that affect the overarching goal to improve outcomes for females and students of color in STEM or STEM-Support (e.g., health) courses and careers include:

- **Student.** Refers to females and under-represented minorities with an interest and aptitude for STEM or STEM support fields. At the postsecondary level, both traditional (full-time) and non-traditional (part-time, older) students are included.
- **Policies and Guidelines.** Includes laws, policies, procedures, and processes that affect the creation, resources, monitoring, assessment, and evaluation of STEM activities.
- **Resources.** Includes federal, state, local and private monies for funding activities in the systems logic model.
- **Programmatic Infrastructure.** Includes current STEM programs/providers/and capacity to provide quality services and resources. Also includes schools districts, institutions of higher education and professional organizations.
- **Business/Community.** Includes STEM employers, foundations, and other non-profit or faith-based organizations.
- **Neighborhood/Family Support.** In-home parent assistance, family time and resources, supports provided by parent-teacher organizations, and neighborhood resources supporting high expectations.
- **Educators.** Refers to principals, assistant principals, teachers, guidance counselors, district, state, and local representatives, department chairs, deans and other key position holders that direct or impact schools, colleges, and universities.
- **Support Infrastructure.** Refers to leadership, research, and other resources that can be used to: (1) set policies, goals, and priorities, (2) inform decision-making, and (3) make systemic improvements.

One, several, or all of the inputs can affect the activities (i.e., programs and other efforts) designed to produce desired outputs. Example of these activities include after school, out of school, and outreach programs, professional development for educators in mathematics and science content and cultural competence, preparation of highly skilled guidance counselors and mentors, and initiatives to increase access to student financial aid.

The goal of activities is to produce outputs, individually or in combination which, in turn, would be expected to produce the ultimate impacts or outcomes that the State of Florida is trying to achieve. The model provides STEM-related outputs for (1) students, (2) administrators, faculty, and guidance counselors, as well as (3) an "other" category which includes increased workforce alignment, STEM legislation, strategic planning and management, adult and peer support, and the research base on STEM issues.

Finally, there are three main impacts of this initiative, which refer to the desired results of the program, a combination of programs, or targeted efforts:

1. to increase STEM learning and achievement,
2. increase the number of students who chose STEM majors, and
3. increase the number of students that persist in STEM majors and careers.

If these targeted outcomes are achieved at a high rate for females and underrepresented minorities, the ultimate goal of narrowing and eliminating gender, racial, and ethnic gaps in STEM will be achieved. In order to examine both intended and unintended impacts, the Work Group strongly suggested that all efforts (activities, outputs and impacts) be monitored through a well structured assessment, evaluation, and feedback system. The Work Group brainstormed possible measures that could be used by the state, districts or individual schools for this purpose. A list is provided in Appendix D.

The Logic Model Supported by Rigorous Causal Research reflects the same desired impacts as the practitioner-based model and how they would be achieved. However, this model diagrams only those connections between context, inputs, outputs, and impacts that are supported by causal research. By definition, this model is constrained by the limited amount of research that has been conducted in the field and the fact that most of the available research is correlational rather than causal.

The context refers to the primary stakeholders within the educational system and their roles in addressing the female and minority STEM disparity. The stakeholders include the following: (1) Florida Department of Education, (2) Public and private universities and community colleges, (3) Florida's school districts, and (4) schools. It is suggested that these entities and their associated personnel provide the policies, rules and regulations, resources, and training (pre-service and in-service) to support STEM teachers as they work to decrease the female and minority STEM disparity. The research suggests that the interactions between teachers and students, parents and other stakeholders further improve teacher practice and, in turn, educational benefits to students.

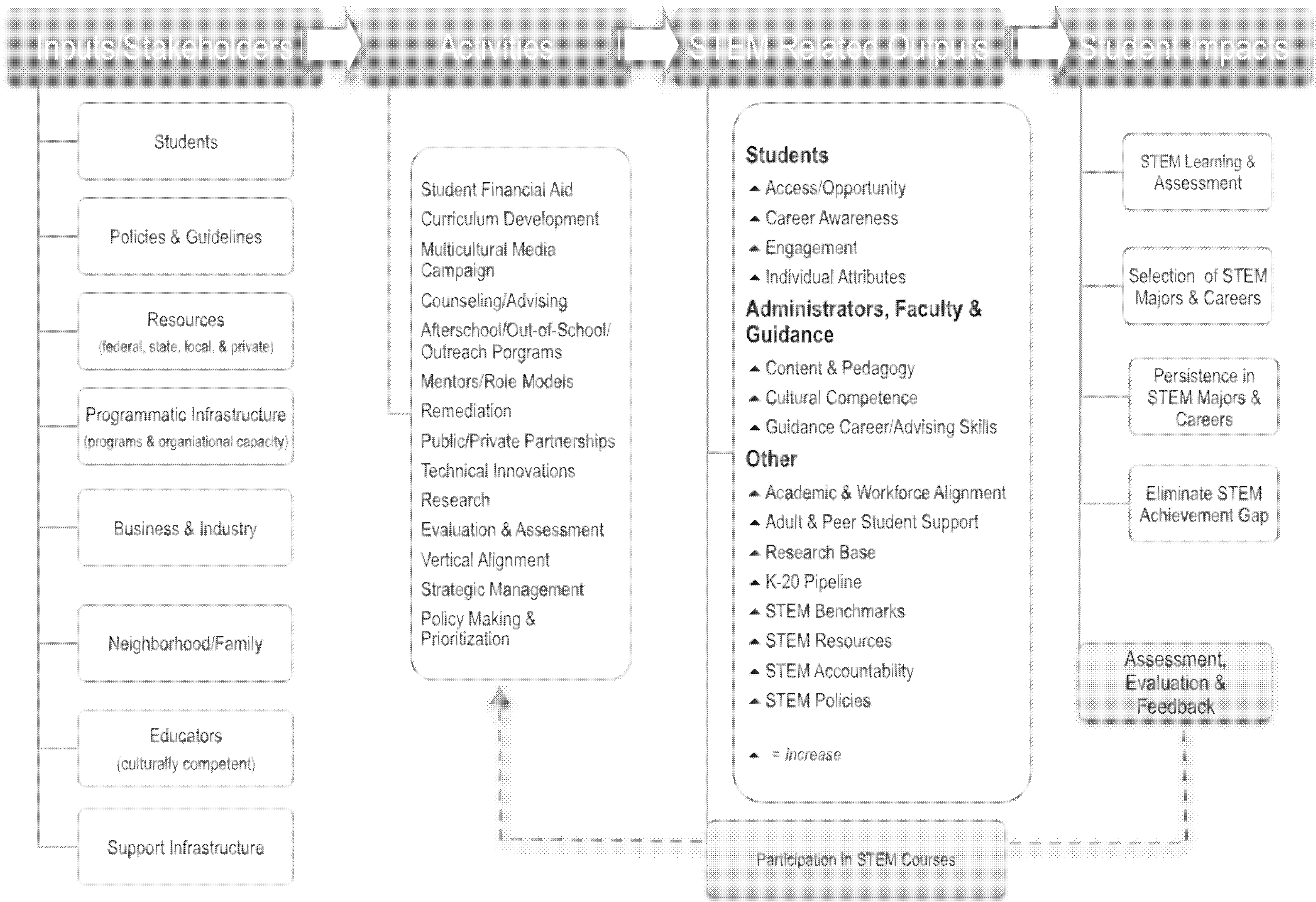
Teacher activities refer to the research-based and school-based interventions that have an effect on the female and minority STEM achievement: (1) Teachers praise the STEM efforts of female and minority students; (2) Teachers contextualize instruction by embedding it in interesting and relevant contexts, such as fantasy, sports, real-world problems, etc.; (3) Teachers use technology-assisted instruction, such as web-based, animated, and video-based presentations of STEM content; and (4) Teachers use hands-on inquiry, project-based learning, and small within-classroom student groupings that facilitate learning.

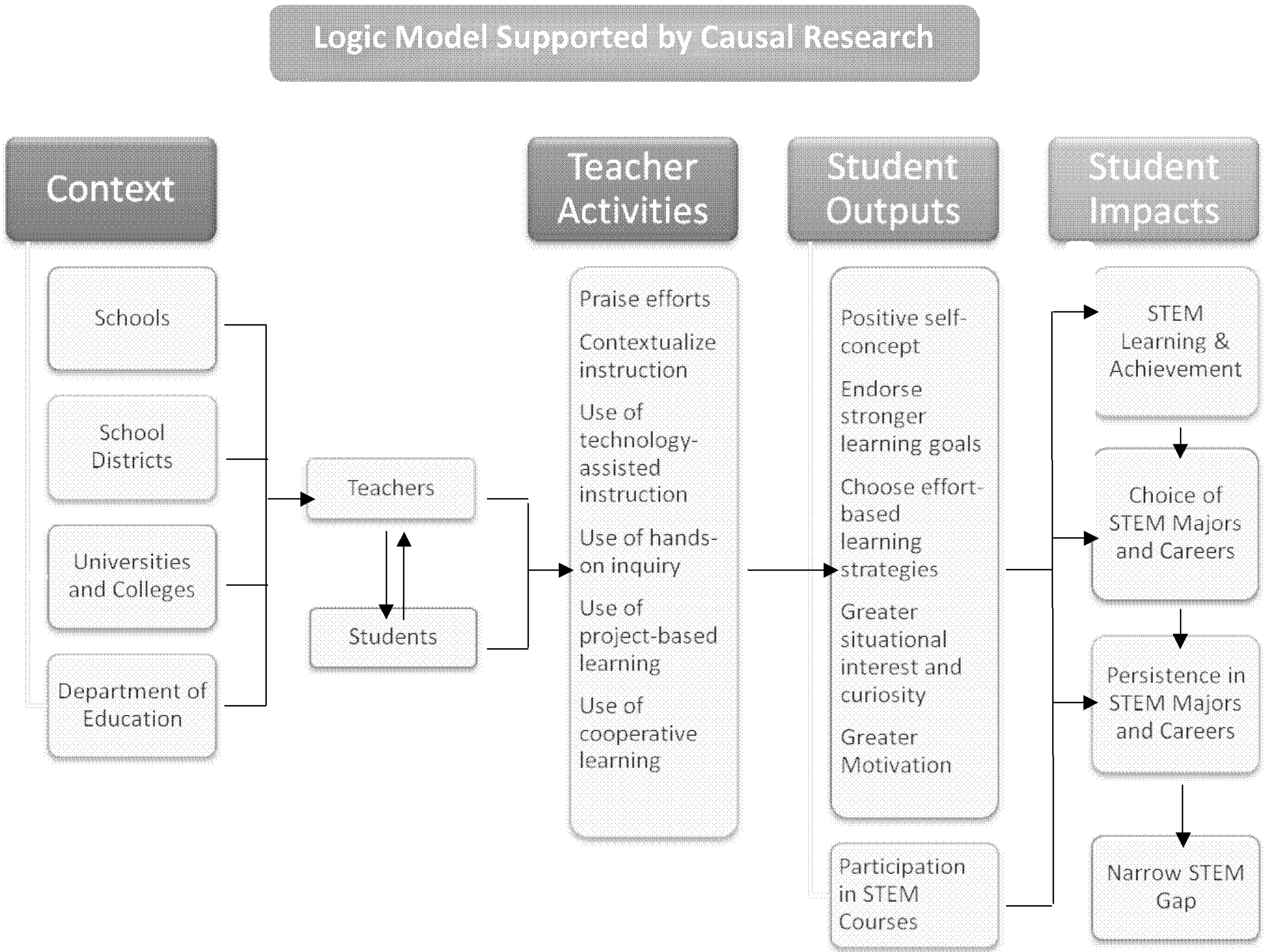
The results of these research-based and school-based interventions by teacher are the following student outputs:

- Female and minority students have a positive self-concept of STEM achievement.
- Female and minority students endorse or establish stronger learning goals or expectations.
- Female and minority students choose effort-based learning strategies when struggling with STEM (e.g., persisting on challenging tasks).
- Female and minority students have greater situational interest and curiosity concerning STEM.
- Female and minority students have greater motivation.
- Female and minority students participate or enroll in more STEM courses.

The ultimate impacts for females and minorities are increased STEM learning and achievement, choice of STEM majors and careers, and persistence in STEM fields. The research indicates that approaches based on this model are likely to narrow gender, racial/ethnic gaps in STEM.

Practitioner-Based Logic Model





Logic Model Supported by Causal Research
Context
Schools
School Districts
Universities and Colleges
Department of Education
Teachers
Students
Teacher Activities
Praise efforts
Contextualize instruction
Use of technology-assisted instruction
Use of hands-on inquiry
Use of project-based learning
Use of cooperative learning
Student Outputs
Positive self-concept
Endorse stronger learning goals
Choose effort-based learning strategies
Greater situational interest and curiosity
Greater Motivation
Participation in STEM Courses
Student Impacts
STEM Learning & Achievement
Choice of STEM Majors and Careers
Persistence in STEM Majors and Careers
Narrow STEM Gap

NEXT STEPS

Currently, the limited amount of research, particularly causal research, constrains the development of a definitive road map for improving the participation and success of females and minorities in STEM fields. More research is needed to provide policymakers and educators with the solutions to improve the STEM educational outcomes of female and minority students.

When feasible, randomized controlled trials should be conducted to determine the effectiveness of interventions; at the very least studies with well-matched treatment and control groups should be conducted. Correlational and qualitative studies could be used to design promising interventions that subsequently can be tested through university research projects or local evaluations.

Researchers should use Florida's rich education data to increase understanding of STEM-related trends and patterns beyond descriptive reports published by the Florida Department of Education.

School districts, colleges, universities and other organizations in Florida are conducting STEM-related programs, policies and activities within and outside K-20 educational institutions. These interventions need to be evaluated for impact and cost-effectiveness.

Some schools may be effectively addressing the educational outcomes of female and minority students. However, we know very little about these schools, what they are doing, and what Florida can do to duplicate their success in struggling schools. To achieve this end, FCR-STEM suggested, and the Female-Minority Initiative Work Group supports, a "Beat the Odds" study. This study would address what programs, policies and other interventions differentiate schools where minorities succeed in mathematics and science versus schools where they do not. Findings would inform the design of interventions that could be evaluated by local school districts or rigorously tested through randomized control trials conducted by universities.

Prior to executing any of this report's recommendations on a large scale, it is necessary to consider existing efforts and their impacts, associated costs, unanticipated consequences, and private and public returns. The current economic recession has increased the urgency to improve STEM educational outcomes of females and underrepresented students of color. Achieving this goal will require long-term investment of public resources in cost-effective and scalable solutions.

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APPENDIX A

Summary of Trends in Female and Minority STEM Achievement and Attainment: K-12 through Post-secondary Schooling in Florida

I. Florida STEM Education PK-12

PK-12 Student Demographics

- Over 50% of students in Florida's public schools are minorities, primarily Hispanics (24%) and Blacks (23%).

K-12 Science Achievement by Race/Ethnicity

- The majority of Florida's students do not score at or above grade level (Level 3 and above) on FCAT-SSS Science. This finding is consistent for every grade level tested (5, 8 and 11).

- Performance on the FCAT-SSS Science declines across the grade levels (highest in 5th grade and lowest in 11th grade).

- Significant racial/ethnic disparities exist on FCAT-SSS Science and persist across all grade levels tested.
    - In 2007, Blacks (44% to 52%) and Hispanics (32% to 39%) had the highest percentage of students scoring at the lowest level; Whites had the smallest percentage (14% to 18%).
    - Conversely, White students had the highest percentage (49% to 56%) scoring at or above grade level (level 3 and above). Hispanics (27 to 32%) and Blacks (15% to 19%) had the lowest percentages.
    - The percentage of White students at or above grade level is almost twice as high as the percentage for Hispanic students and about triple the percentage for Black students in the same grades.

- Students of all races/ethnicities are showing progress in FCAT-SSS Science. However, the rate of progress varies in the lower grades (5 and 8). From 2005 to 2007, Black students had the greatest decrease in the percentage of students scoring at the lowest level (level 1), while White students had the greatest increase in the percentage of students scoring at higher levels (3 and above).

K-12 Math Achievement by Race/Ethnicity

- Overall, Florida's students perform better on FCAT-SSS Mathematics than Science. The relative superiority of math over science performance is substantial, particularly for Hispanics and Blacks.

- Despite the favorable comparison to Science, Mathematics performance remains low for many students.

- Significant racial/ethnic disparities exist on FCAT-SSS Mathematics in grades 5, 8 and 10.

- In 2007, Blacks (23% to 37%) and Hispanics (16% to 26%) had the highest percentage of students scoring at the lowest level; Whites had the smallest percentage (8% to 13%) – about half the percentage for Hispanics and one-third the percentage for Blacks.

- Conversely, White students had the highest percentage (69% to 77%) scoring at or above grade level (level 3 and above). Hispanics (51% to 63%) and Blacks (37% to 49%) had the lowest percentages.

- The percentage of White students at level 1 is about <u>half</u> the percentage for Hispanic students and about <u>one-third</u> the percentage for Black students in the same grades. Similar gaps between Whites and Blacks/Hispanics also exist in the percentage scoring 3 and above but are smaller in size.

- In Florida, students of all races/ethnicities are showing progress in FCAT-SSS Mathematics.
    - From 2005 to 2007, Blacks followed by Hispanics showed the greatest decrease in the percentage of students scoring at level 1 in middle and high school. Neither Whites, Blacks nor Hispanics showed much decline in the percentage of level 1 students in the upper elementary grades (grades 3-5).
    - Blacks followed by Hispanics also had the greatest increase in the percentage of students scoring at or above grade level (3 and above) – unlike science where Whites showed the greatest gain.

K-12 Math Achievement by Gender

- Male and female students in Florida show disparities in performance on the FCAT-SSS Mathematics, but the differences tend to be small in magnitude.

- Slightly more males than females score at level three and above; females have a slightly lower percentage of students scoring at the lowest level (Level 1).

- At the upper elementary and middle grades, females and males in Florida show similar gains in the percentage of students scoring at level 1 and at levels 3 and above. In high school, females continue to show progress, while males do not.

Advanced Placement Examination by Gender

- In 2006, Females accounted for the majority (59%) of Florida's 11th and 12th graders taking AP examinations.

- ❖ However, males took more exams per student and obtained higher scores on average than females.

Advanced Placement Examination by Race/Ethnicity

- ❖ In 2006, White, Hispanic and especially Asian students were overrepresented among Florida's 11th and 12th graders sitting for AP examinations, while Blacks were underrepresented.

- ❖ Whites, Hispanics and especially Asians took more examinations per student than Blacks. They also obtained higher scores (45 to 50% of examinations were scored 3 or higher – about twice the percentage as Black students (24%)).

II. Florida STEM Education Post-Secondary

SAT and ACT Scores by Race/Ethnicity

- ❖ Minorities comprise an increasing percentage of SAT and ACT test takers in Florida.

- ❖ A substantially higher percentage of minorities take the SAT and ACT in Florida, compared to the nation. In 2006, Blacks represented 21.4% of ACT test takers in Florida, compared to 12.9% in the nation. Hispanics comprised 17.3% of ACT test takers in Florida, compared to 8.0% in the nation.

- ❖ Florida Hispanics score above their national peers; Whites, Blacks and students of other races/ethnicities (i.e., Asians) score below their national peers.

SAT and ACT Scores and Course-taking

- ❖ Taking higher level courses in mathematics (e.g., calculus) and science (e.g., physics) is correlated with higher SAT and ACT scores.

- ❖ Course-taking is similar among males and females for lower level math courses, but a larger percentage of males take higher level math courses, such as calculus.

- ❖ Black test takers are less likely to take higher level math and science courses than Asians, Whites and Hispanics.

SAT and ACT Score Trends by Gender

- ❖ As in Florida's AP examinations, females comprise the majority (55%) of students taking the SAT. However, males consistently outscore females by 30 to 39 points in mathematics. A similar gender difference – smaller in size – exists on the ACT.

- The gender gap is evident for students of all races and ethnicities.

Florida's Community Colleges

- Two-thirds of Florida's community college students are enrolled in AA degree programs. 35% of AA degree enrollees are minorities. Of these, Hispanics are the largest minority (53%) followed by African Americans (37%), Asians (9%), and American Indians (1%).

- 36% of Florida's AS degree enrollees are minorities. Among AS enrollees and completers, African Americans are the largest minority.

- Females comprise a greater percentage of Florida's community college enrollees and completers than males in all racial/ethnic groups.

Under-represented Racial/Ethnic Groups in STEM Degree Attainment

- In Florida, White and Asian groups are overrepresented in state university degree attainment across all STEM fields, while Blacks and Hispanics are underrepresented (relative to their representation in the K-12 student population).

- Blacks are most underrepresented in mathematics, engineering, and engineering technology. Hispanics are most underrepresented in mathematics, physical sciences, and information technology.

Under-represented Gender Groups in STEM Degree Attainment

- In terms of STEM degree attainment at state universities in Florida, there has been a continual decline since 2000 in the number of both males and females completing degrees in information technology.

- Females are under-represented in the physical sciences, information technology, engineering, engineering technology, and mathematics, but are overrepresented in the life sciences.

- Females are making gains in the attainment of STEM degrees in engineering, engineering technology, and most notably, the physical sciences. However, a substantial gap still exists because males already overrepresented are also increasing their attainment of STEM degrees, although at a slower rate.

- Physical sciences is the STEM field in which females are making the greatest progress toward closing the gender gap. Although females are still underrepresented, degree attainment in the physical sciences is accelerating at a faster rate for females than males.

APPENDIX B
LITERATURE REVIEW

GENDER AND RACIAL ATTAINMENT DISPARITIES IN SCIENCE AND MATHEMATICS: A REVIEW OF THE LITERATURE

February 15, 2009

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Acknowledgements:

The authors wish to thank Christine Johnson, Hong Gao, Jian Gao, Danielle Sherdan, and the members of the Female and Minority Initiative Advisory Panel and Work Group for their helpful suggestions and insightful comments on previous drafts.

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GENDER AND RACIAL ATTAINMENT DISPARITIES IN SCIENCE AND MATHEMATICS: A REVIEW OF THE LITERATURE

Abstract

The authors review the literature with respect to the gender and racial attainment disparities in the fields of science and mathematics. Substantial disparities are evident in the science and mathematics attainment (opportunities, achievement, choices, and persistence) of female and minority students at the elementary, secondary, and post-secondary education levels. The authors identify the behavioral and social variables that explain the gender and racial attainment disparities. These variables include individual attributes (attitude, commitment, interest, self-concept, and self-efficacy), school features (school resources; teacher quality, distribution, and socialization practices; course-taking; instructional practices; and financial aid), and societal forces (socio-economic status, discrimination, and parental involvement and expectations). Their synthesis of the literature indicates that the evidence supporting the effectiveness of the majority of the variables is mixed and inconsistent, and only a few variables receive support from rigorous causal research. They conclude by identifying limitations in the literature and offering recommendations for future research.

Key Words: Females, minorities, science, mathematics, achievement, participation, persistence.

Introduction

Disparities in female and minority attainment in the fields of science and mathematics have profound economic and social implications. The disparities affect global economic competitiveness by weakening our nation's ability to meet the increasing demands for a labor force with skills, expertise, and literacy in science and mathematics. With females and minorities being underrepresented among those entering and remaining in science and mathematics fields (National Science Foundation, 2007), meeting the nation's workforce demands and, in turn, maintaining the global competitiveness of the U. S. economy will depend on solutions that reverse this trend (Gordon, 2007). An increasing demand for proficiency in science and mathematics, paired with a decreasing supply of females and minorities in those fields, suggests that females and minorities will have difficulty contending for employment and competitive wages in these fields (Neal & Johnson, 1996; Antecol & Bedard, 2004; Graham & Smith, 2005; Holzer, Offner, & Sorensen, 2005). Furthermore, attainment disparities exacerbate gender and racial income inequalities (Raudenbush & Kasim, 1998; Kerckhoff, Raudenbush, & Glennie, 2001; Finnie & Meng, 2002; De Anda & Hernandez, 2007) and, in turn, may even compromise individual psychological and physical health (Reynolds & Ross, 1998). Increasing the attainment of females and minorities in science and mathematics addresses national concerns related to the competitiveness of our labor force and economy, and the elimination of economic and social inequalities. Accordingly, it is imperative that policymakers, at the national, state, and local levels, fully comprehend the conditions that impact the plight of females and minorities in order to effectively address and ameliorate the disparities in science and mathematics.

The objective of our review is to summarize the findings from current literature that pertain to female and minority attainment disparities in the fields of science and mathematics.

We elect to pattern our review after the review by Oakes (1990) titled, "Opportunities, Achievement, and Choice: Women and Minority Students in Science and Mathematics." Despite its year of publication, the review by Oakes continues to be one of the most cited reviews of gender and minority attainment in the fields of science and mathematics. Additional narrative and meta-analytic reviews, such as those by Frost, Hyde, and Fennema (1994), Li (1999), Clewell and Campbell (2002), Ferguson (2003), Herzig (2004), Lee (2005), Jacobs (2005), Stinson (2006), and Wiggan (2007), also represent important works that contribute substantially to the literature. Rather than extensively covering the field, each of these reviews examined a specific phenomenon within the literature. However, we view Oakes' review as the appropriate model given its coverage and comprehensiveness.

We acknowledge that Oakes' review summarizes the literature conducted prior to 1990 on the attainment disparity by gender and race. Our review extends and builds upon her findings and valuable suggestions. Similar to Oakes' review, our review will address the following topics: female and minority opportunities, achievement, choice, and persistence in primary, secondary, and post-secondary schooling; the behavioral and social variables that explain the racial and gender disparity in science and mathematics; and suggestions for policy interventions and further research.

Literature Review Process

We began the literature review process by searching for existing reviews of literature and empirical studies that specifically discuss females and minorities in science and mathematics during the last 18 years. Our search for literature required the use of multiple search engines and databases, such as *Google Scholar*, *PsycINFO*, *ERIC*, *JSTOR*, and *ISI Web of Science*. We used several descriptors in our database search (female, minority, mathematics, science, achievement, participation, and persistence). Following the database search, we searched for additional manuscripts in the volumes and issues of major journals, such as the *Review of Educational Research*, *Journal of Research in Science Teaching, American Educational Research Journal, Journal for Research in Mathematics Education, Science Education, Sociology of Education, Economics of Education Review,* and *International Journal of Science Education* among many others. Furthermore, we searched the reference lists of the manuscripts we found from either the databases or from the journals. Our search produced over 260 related manuscripts and reports from approximately 80 peer-reviewed journals and several research and governmental institutions, such as the National Science Foundation and the Institute of Education Science. The manuscripts used a variety of research methods (qualitative, correlational, quasi-experimental, and experimental) from various disciplinary perspectives (psychology, anthropology, sociology, and economics) to study the female and minority attainment disparity in mathematics and science.

Background

Oakes (1990) asserted that "three factors are critical to attainment: (a) opportunities to learn science and mathematics; (b) achievement in those subjects; and (c) the decision to pursue them" (p. 154). We add persistence as the fourth factor because of its salience at post-secondary education and occupational levels for females and minorities (Rayman & Brett, 1995; Fenske, Porter, & DuBrock, 2000). Therefore, we can attribute the female and minority attainment disparities within the fields of science and mathematics to differential opportunities, achievement, choice, and persistence at various levels of schooling including primary, secondary, and post-secondary (Oakes, 1990; Catsambis, 1994; Lee & Luykx, 2007).

Interestingly, Oakes (1990) stated that, coupled with encouragement, females and minorities respond to mathematics and science opportunities with competitive achievement and continued participation in those fields. Their response is equivalent to the response from White male students. The fact that females and minorities have similar responses when supportive conditions (encouragement and opportunity) are equivalent provides hope. It appears that the elimination of the attainment disparity rests upon, at a minimum, ensuring the provision of similar supportive conditions. However, the remedy is not that simple, as the literature suggests that female and minority students generally receive less encouragement (Browne & Rife, 1991; Lareau & Horvat, 1999; Yan & Lin, 2005) and have a smaller number of mathematics and science opportunities. Furthermore, minorities (including female minorities) attend racially segregated (Borman et al., 2004) and poor quality schools (Roscigno, 2000; Ainsworth, 2002), and possess inferior school resources (Duncombe & Yinger, 2005). Goldsmith (2004) added that Black and Hispanic students are more likely to come from low socio-economic and single parent households, and live in high poverty neighborhoods as compared to White students.

Ladson-Billings (1997) and Lee (2000) suggested that gender and racial disparities in mathematics and science are incredibly complex. Spelke (2005) stated that the disparities likely reflect the intersection of multiple and complex social, behavioral, and cultural variables and contexts. Thus, equalizing supportive conditions alone will not be sufficient; interventions will need to take into account the social, behavioral, and cultural contexts of the students, schools, curriculum, classrooms, and teachers (Ladson-Billings, 1995; Loving, 1998; Lee & Fradd, 1998). Oakes acknowledged the complexity, and stated, "our knowledge of the causes of low achievement and participation and our understanding of what policies and programs will improve them remains limited" (1990, p. 154). To resolve the lack of understanding, she suggested that "we need considerable research to determine what programs will be the most successful" (p. 154).

Opportunities, Achievement, Choice, and Persistence

From the elementary to the post-secondary school level, prior mathematics and science achievement influences the opportunities, choices, and persistence of female and minority students (Oakes, 1990; House, 1993; Tate, 1997; Lucas & Berends, 2002). Particularly, prior achievement impacts the assignment of students to gifted programs in elementary school, pre-high school mathematics courses (i.e., pre-algebra, algebra, and geometry) in middle school, and academic curriculum tracks and college preparation courses in high school (Oakes, 1992). Schools typically assign low achieving students to low-ability and remedial courses, vocational and non-academic tracks (Braddock & Dawkins, 1993; Kao & Thompson, 2003), and to special education programs (Artiles & Trent, 1994; Harry & Anderson, 1994; Oswald, Coutinho, Best, & Singh, 1999; Eitle, 2002; Artiles, Harry, Reschly, & Chinn, 2002; Blanchett, 2006). This is especially the case for minority students; however, as schools do not necessarily assign females over males to specific courses or tracks. In most cases, females choose to enroll in courses or tracks according to their attitude, interest, and self-concept (Eccles, 2005; Jacobs, 2005). Nonetheless, without exposure to an advanced and high quality mathematics and science curriculum either through tracking or self-selection, female and minority students lose interest and participate less in mathematics and science opportunities. This has a negative impact on their opportunities, achievement, choices, and persistence.

Literature also cites specific examples of differential opportunities, choices, and persistence by race and gender. First, Black students participate at disproportionately lower levels in gifted education programs than White students (Ford, 1998), and participate more than

White students in special education programs, such as emotional/behavioral disability programs (Harry & Anderson, 1994; Patton, 1998; Coutinho & Oswald, 2000; Mandell, Davis, Bevans & Guevara, 2008). The greater participation of Black students in special education programs over White students is known as disproportionality, and is due to overidentification (Oswald, Coutinho, Best, & Singh, 1999). Second, Black and female students participate less in mathematics and science advanced placement (AP) programs than White and male students (Benbow, 1992; Stumpf & Stanley, 1998; Klopfenstein, 2004). Third, Black and female students persist less than White males in science and mathematics majors at the post-secondary level, such as chemistry, engineering, mathematics, and physics (Jacobs, 1996; Leslie, McClure, & Oaxaca, 1998; Simpson, 2001; Smyth & McArdle, 2004).

Lower levels of participation in gifted education and AP programs, and disproportionately higher levels of enrollment in emotional/behavioral disability programs can severely limit the opportunities, achievement, and choices of minority students. Less persistence in science and mathematics majors at the post-secondary level reduces the likelihood of occupational and income prestige (Simpson, 2001). It is important to note that disproportionality by gender does exist in terms of the placement of students in special education programs, such as emotional/behavioral and learning disability programs (Coutinho & Oswald, 2005). However, unlike minority students, male students represent a disproportionately greater number of students placed in special education programs than female students (Oswald, Best, Coutinho, & Nagle, 2003; Coutinho & Oswald, 2005; Oswald, Best, & Coutinho, 2006).

A substantial body of literature discusses the achievement gaps by race (Hanushek, 2001; Lubienski, 2002; Lee, 2002; Fryer & Levitt, 2006) and gender (Nowell & Hedges, 1998; Schreiber, 2002; Gonzales et al., 2004; Hyde & Linn, 2006). The large number of studies that address gaps specifically in mathematics and science achievement examine nationally representative datasets, such as Project Talent, Equality of Educational Opportunity (EEO), the National Longitudinal Study of the High School Class of 1972 (NLS: 1972), the National Longitudinal Study of Youth (NLSY), High School and Beyond (HS&B), the National Educational Longitudinal Study of the Eight Grade Class of 1988 (NELS: 1988), the National Assessment of Educational Progress (NAEP), the Third International Mathematics and Science Study (TIMSS), and the Early Childhood Longitudinal Study Kindergarten Cohort (ECLS-K).

According to these studies, the differences in mathematics and science achievement between White and minority students extend from elementary to high school, and are relatively large. Analyzing the ECLS-K dataset, Fryer and Levitt (2004) discovered, from a sample of over 20,000 children, that Black and White children entering kindergarten have similar achievement according to a subjective teacher assessment of general knowledge and controlling for observable characteristics, such as age, birth weight, and socio-economic status. However, a .20 standard deviation gap in achievement emerged between Black and White children once they progressed to the first grade. They concluded that, if the trend continues, the achievement gap would increase to .50 of a standard deviation by the fifth grade. According to Tate (1997), White students exhibited higher mathematics achievement than Black and Hispanic students in elementary, middle, and high school as measured by the NAEP between 1973 and 1992, NELS: 1988, and the HS&B. However, substantial improvements in mathematics achievement for Black and Hispanic students during the 1980s and 1990s reduced, but did not eliminate, the mathematics achievement gap.

Hedges and Nowell (1999) confirmed Tate's findings after examining the same and additional datasets. They analyzed mathematics, reading, vocabulary, and science achievement using the EEO, NLS: 1972, NLSY, HS&B, NELS: 1988, and the NAEP. They found that, for each dataset and at all grade levels, the mean achievement for White students exceeded that for Black students. Furthermore, the effect sizes (standardized mean difference *d*) ranged from medium to large even after an adjustment for socio-economic status, family, and community variables. Like Tate (1997), they observed a narrowing of the Black-White achievement gap in mathematics over time from $d = .75$ in 1960 to $d = .60$ in 1992. However, the science achievement gap increased from $d = .63$ in 1980 to $d = .76$ in 1992. Despite the decline in the mathematics achievement gap, the differences between White and Black students are still relatively large in both mathematics and science achievement. Based on their findings, Hedges and Nowell (1999) predicted that the mathematics and science achievement gaps would require more than 100 years to close according to the trends from the non-NAEP datasets and 75 years to close based on the NAEP dataset.

Mathematics and science achievement differences between male and female students are substantially smaller in magnitude compared to the differences between White and minority students. Hedges and Nowell (1995) and Nowell and Hedges (1998) analyzed the achievement differences by gender for several academic and vocational subjects including reading, vocabulary, mathematics, science, social studies, electronics, and auto and shop. Analyzing several nationally representative datasets, such as Project Talent, EEO, and NLS: 1972, NLSY, HS&B, and NELS: 1988, and the NAEP, they discovered that male students exhibited higher mathematics and science achievement than female students. The effect sizes for mathematics and science from non-NAEP and NAEP datasets are relatively small and appear to narrow over time. Tate's (1997) results support these findings based on analyses of the NAEP dataset between 1973 and 1992 and the NELS: 1988 dataset. Tate (1997) also found that the mathematics and science differences between male and female students are very small at each grade level tested but noted that "mathematics achievement differences when they exist between genders emerge in secondary school" (p. 670). Hyde and Linn (2006) confirmed that gender differences do emerge in high school with males outperforming females on mathematics problem-solving ($d = .29$); however, there were no gender differences on mathematical computation and concepts. Recent evidence from state assessment data contradicts earlier research, and indicates that gender differences in mathematics are trivial in high school ($d < .10$) (Hyde et al., 2008). Furthermore, Hyde et al. (2008) suggested that gender differences on difficult mathematics items, such as mathematics problem-solving, are small and practically insignificant (average $d = .07$).

Behavioral and Social Variables

Oakes (1990) identified and grouped the most influential behavioral and social variables affecting the mathematics and science outcomes of females and minorities into three categories: individual attributes, schooling features, and societal forces. In most instances, studies find that the opportunities, achievement, choice, and persistence of either females or racial minorities depend on a combination of variables and not exclusively on a single variable (Volet, 1997; Singh, Granville, & Dika, 2002; Moore, 2006; Halpern et al., 2007). For instance, Hebert and Reis (1999) interviewed high-achieving students from diverse cultural backgrounds enrolled in an urban high school. They identified a range of variables that correlate with success, including motivation (individual attributes), challenging courses (schooling features), and parental and adult support (societal forces). The next three sections describe the findings of studies that focus on the influence of individual attributes, schooling features, and societal forces on the opportunities, achievement, choice, and persistence of females and minorities.

Individual Attributes

Individual attributes represent the affective, aptitude, and motivation of the student. They include cognitive and non-cognitive traits, such as ability, attitude, commitment, interest, self-concept of ability, and self-efficacy (Singh, Granville, & Dika, 2002; Alsop & Watts, 2003). Current literature finds that individual attributes influence the schooling outcomes of females and minorities (Andre, Whigham, Hendrickson, & Chambers, 1999; Bleeker & Jacobs, 2004; Bhanot & Jovanovic, 2005; Jacobs, 2005). For instance, Schreiber (2002) examined a sample of U.S. 12^{th} grade students from TIMSS (N = 1,839), and noted that positive attitudes towards mathematics were positively correlated with advanced mathematics achievement. Schreiber's (2002) findings support evidence from Farenga and Joyce (1998), Utsumi and Mendes (2000), and Hammouri (2004). On the other hand, Ma (1997) suggested that attitude and achievement may have a reciprocal relationship. Furthermore, Ma and Xu (2004) and Georgiou, Stavrinides, and Kalavana (2007) contended that mathematics achievement is a stronger predictor of attitude than attitude is of mathematics achievement. However, in a review of five studies from Japan, Minato and Kamada (1996) discovered that attitude is a stronger predictor of achievement. Although the relationship between attitude and mathematics achievement remains unclear, attitude is an important individual attribute regardless of whether it is a predictor or an outcome of mathematics achievement.

Goal and institutional commitment are salient predictors of post-secondary and career persistence according to Leslie, McClure, and Oaxaca (1998), Leppel (2001), Davis et al. (2003), Mäkinen, Olkinuora, and Lonka (2004), and Strauss and Volkwein (2004). Goal commitment refers to the student's commitment to educational goals, while institutional commitment is the student's commitment to her or his institution of higher education (Tinto, 1993). Grandy (1998) longitudinally studied the persistence of a sample of minority students in science and engineering careers (N = 2,557) and found that student institutional commitment was the strongest predictor of career persistence, more so than socio-economic status, prior achievement, or other predictors. Sandler (2000) had similar findings and noted that institutional commitment is a significant predictor of the persistence of a sample of adult and nontraditional undergraduate students (N = 469). However, Nora and Cabrera (1996) studied the persistence of a sample of college freshmen (N = 831) and found that goal and institutional commitment did not have a significant direct or indirect relationship with the persistence of minority students, while goal and institutional commitment had both a significant direct and indirect relationship with the persistence of non-minority students. Social integration, perceptions of prejudice, parental encouragement, and prior achievement were also found to be significant predictors of minority student persistence (Nora & Cabrera, 1996).

Interest and self-concept of ability, and their relationship with schooling outcomes, have received ample attention in the literature (Schiefele & Csikszentmihalyi, 1995; Greenfield, 1997; Marsh & Yeung, 1998; Jones, Howe, & Rua, 2000; Haussler & Hoffmann, 2002; Caleon & Subramaniam, 2007). For example, Jayaratne, Thomas, and Trautmann (2003) evaluated an intervention designed to improve the science persistence of a sample of eighth grade minority and non-minority females (N = 211). They found that non-minority females had greater interest in science and a greater self-concept of science ability than minority females. Linver and Davis-Kean (2005) studied a longitudinal sample of students (N = 1,651) from the Michigan Study of Adolescent Life Transitions (MSALT). They reported that higher interest and self-concept of math ability for honors female students correlated with a slower decline of math grades from the seventh to the 12th grade, and had a greater influence for female students than male students. Awad (2007) examined the relationship between racial identity, self-concept of ability, self-esteem, and grade point average (GPA) and test scores for a sample of Black students (N = 313). Those findings indicated that self-concept of ability is a significant predictor of GPA but not of test scores. Thus, despite differences between minority and non-minority students, and low and high achieving students, it is apparent that interest and self-concept of ability have an important relationship with mathematics and science achievement (Ma & Kishor, 1997; Haussler & Hoffmann, 2002; Matson, DeLoach, & Pauly, 2004; Linver & Davis-Kean, 2005). Differences in the self-concept of ability and interest by race also predict differences in educational outcomes, such as participation and persistence (Jayaratne, Thomas, & Trautmann, 2003). However, similar to findings concerning attitude, the relationships between self-concept of ability and educational outcomes are reciprocal (Wang, Oliver, & Staver, 2008) with achievement (or other educational outcomes) as the stronger predictor (Hoge, Smit, & Crist, 1995).

Several studies examined the relationship between self-efficacy and mathematics and science outcomes (Pajares, 1996; Pajares & Graham, 1999; Bong, 2001; Nasser & Birenbaum, 2005; Stevens, Olivarez, & Hamman, 2006). Pajares and Miller (1994) compared the influence of self-efficacy and self-concept of ability on the mathematical problem solving of a sample of undergraduate students (N = 350). They noted that self-efficacy was a stronger predictor of problem-solving when compared to self-concept, and self-efficacy mediated the relationships of gender and prior experience with self-concept and mathematical problem-solving. Stevens et al. (2004) studied the relationship of self-efficacy and motivational orientation with the mathematics achievement and further participation in mathematics courses of a sample of ninth and 10th grade students (N = 358). They observed that self-efficacy is a significant predictor of mathematics achievement as well as motivational orientation. Furthermore, they discovered a significant difference between Hispanic and White students in terms of the relationship between prior mathematics learning and self-efficacy. O'Brien, Martinez-Pons, and Kopala (1999) examined the relationships of gender, ethnicity, and mathematics self-efficacy with the career interests in mathematics and science of a sample of 11th grade students (N = 415). They indicated that gender and self-efficacy have a direct relationship with mathematics and science career interests. Interestingly, achievement, ethnicity, and socio-economic status are predictors of self-efficacy. Therefore, self-efficacy mediates the relationships of achievement, ethnicity, and socio-economic status with career interests in mathematics and science. Although the relationship between self-efficacy and achievement is not completely clear, the importance of self-efficacy as an individual attribute remains. In light of the vague relationship between individual attributes and educational outcomes (see Baumeister et al. (2003) concerning self-esteem), we put forward the possibility that attitude, self-concept of ability, and self-efficacy may act as mediators between prior and future educational outcomes. If these assertions were substantiated, they would not only clarify the promising role of individual attributes, but also provide an explanation of the importance of prior mathematics or science achievement as an antecedent predictor of future achievement.

School Features

School features have an intuitive relationship with mathematics and science opportunities, achievement, choice, and persistence. It is evident that certain school features, such as school resources and teacher quality, represent the foundation upon which all other school features rest. Female and minority students, and all students for that matter, would not have access to the spectrum of schooling opportunities without the foundational school features. Although the effectiveness of school resources is debatable (Greenwald, Hedges, & Laine, 1996;

Hanushek, 1997; Figlio, 1999), literature overwhelmingly acknowledges the critical importance of teacher quality (Goldhaber & Brewer, 2000; Rowan, Correnti, & Miller, 2002; Wayne & Youngs, 2003; Hill, Rowan, & Ball, 2005). We elect not to dedicate a discussion to school resources or teacher quality beyond the citations above due to the enormity of the literature, the ambiguous influence of school resources, and the relatively clear relationship between teacher quality and student educational outcomes. However, with respect to teacher quality, we will briefly discuss the distribution of effective teachers and teacher socialization practices with students, as well as course-taking, instructional practices, and financial aid.

While recent research points to the strong relationship between teacher quality and student outcomes (Rockoff, 2004; Rivkin, Hanushek, & Kain, 2005; Aaronson, Barrow, & Sander, 2007), the distribution of quality teachers is also of critical importance with respect to the racial science and mathematics attainment disparity. Recent findings from Clotfelter, Ladd, and Vigdor (2005) indicated that Black seventh grade students in North Carolina were more likely to have a novice mathematics teacher when compared to White students. They argued that the disproportionate assignment of Black students to novice teachers might not completely explain the Black-White achievement gap, but certainly had the potential to perpetuate it. Sanders and Horn (1998) noted in Tennessee that "black students were disproportionately assigned to the least effective teachers. Regardless of race, students who are assigned disproportionately to ineffective teachers will be severely academically handicapped relative to students with other teacher assignment patterns" (p. 254). However, Sanders and Horn (1998) indicated that Black students and White students had comparable levels of achievement when they had similar levels of prior achievement and quality teachers.

Teachers, as socializing agents, also have a strong relationship with the formation of science and mathematics interests and beliefs (Linver & Davis-Kean, 2005), achievement (Li, 1999), and the choices (Dick & Rallis, 1991) of females and minorities. Teachers socialize their students via expectations and beliefs, gender-stereotyping, and communication and feedback. According to Ferguson (2003), "racial biases can exist in teachers' perceptions, expectations, and behaviors, or in any combination of the three" (p. 493). Additionally, Tinto (1993) suggested that institutional and departmental cultures, an aggregated form of socialization, can work in favor or against student integration and involvement in post-secondary institutions. Many other studies have addressed expectations and beliefs (Jussim & Eccles, 1992; Eccles et al., 1993; She, 2000; Garrahy, 2001; Garrahy, 2003), gender-stereotyping (Tiedemann, 2000, Ferguson, 2003; Diamond, Randolph, & Spillane, 2004; Gray & Leith, 2004), and communication and feedback (She, 2000; Patrick et al., 2001). For instance, Linver and Davis-Kean (2005) examined several predictors of mathematics grades for a sample of male and female students (N = 1,651) using data from the MSALT. They noted that teacher expectations of students' abilities in seventh grade mathematics, along with prior achievement and parental expectations, are important predictors of the performance of high-ability seventh grade females. However, they also found that "males' grades did not depend on the expectations of their teachers, unlike for girls in the high-ability tracking group" (p. 59). Tiedemann (2000) reiterated these results, and also stated that teacher beliefs and expectations "for future achievement show a clear gender-stereotyped perceptual bias that could be more detrimental to girls' achievement than to boys" (p. 204). Furthermore, Tiedemann (2002) studied teacher gender-stereotyping and student mathematics achievement with a sample of elementary school students (N = 288), and reported that gender-stereotyping by teachers distorts their impression of the mathematics achievement of students with prior low and average mathematics achievement.

The Institute of Education Science (2007) reviewed evidence from several studies concerning the teacher's role in modifying the self-concept of mathematics ability of female as well as minority students. Two experimental studies cited in the review found that communication in the form of praise from teachers to students (especially females and minorities), indicating that mathematics abilities can improve through effort and learning, assists students to gain confidence in their abilities (Mueller & Dweck, 1998; Blackwell, Trzesniewski, & Dweck, 2007). Moreover, Blackwell, Trzesniewski, and Dweck (2007) discovered that students in junior high school, including females and minorities, who indicate that they believe intelligence is incremental and malleable through effort and learning are more likely to "endorse stronger learning goals, hold more positive beliefs about effort, and make fewer ability-based, ''helpless'' attributions" (p. 258). Consequently, students with these beliefs "choose more positive, effort-based strategies in response to failure, boosting mathematics achievement over the junior high school transition" (p. 258). Both Mueller and Dweck (1998) and Blackwell, Trzesniewski, and Dweck (2007) affirmed that the key to mathematics achievement for both female and minority students is the communication from teachers that praise their efforts. However, Mueller and Dweck (1998) noted that praising the abilities of students instead of their efforts "could lead to even more detrimental achievement beliefs and behaviors" (p. 50) among female and minority students.

The Institute of Education Science (2007) also suggested that teachers should provide motivational support and feedback to students. The primary aim of motivational support and feedback is to enhance the beliefs of students concerning the reasons why they did or did not exhibit high mathematics performance, and how to correct it (Turner et al., 2002; Schweinle, Turner, & Meyer, 2006). Turner et al. (2002) examined a sample of sixth grade elementary school students (N = 1,197), and noted that students "reported lower incidences of avoidance strategies in classrooms in which teachers provided instructional and motivational support for learning. In those classrooms, teachers helped students build understanding, gave them opportunities to demonstrate new competencies, and provided substantial motivational support for learning" (p. 102). Furthermore, these teachers "demonstrated that being unsure, learning from mistakes, and asking questions were natural and necessary parts of learning" (p. 102-103). Schweinle, Turner, and Meyer (2006) studied the motivation and affect of a sample of students in upper elementary mathematics classes (N = 6). While the sample size was small, the findings suggested that additional study was warranted regarding the provision of frequent, elaborative, positive, and helpful feedback related to the motivation and affect of male and female students in mathematics. Although the studies by Turner et al. (2002) and Schweinle, Turner, and Meyer (2006) used correlational and qualitative methods, their findings indicate that motivational support and feedback from teachers may enhance the motivation and affect of students with respect to mathematics achievement and persistence.

Substantial literature also examines the number and type of courses taken and their respective relationship with mathematics and science achievement (Farmer et al., 1995; Spade, Columba, & Vanfossen, 1997; Gutierrez, 2000; Ma and Wilkins, 2002). For instance, Lee, Croninger, and Smith (1997) studied a sample of high school students (N = 3,056) from the 1990 High School Transcript Study that is part of NAEP. Their correlational study indicated that students exhibited high math achievement in schools where they take more mathematics courses, where their mathematics courses fall within a college preparatory program, and where the mathematics curriculum consists of higher proportions of academic courses. Davenport et al. (1998) analyzed the same dataset and compared the Carnegie units between gender and racial groups for a sample of 10,498 students. They noted that females earned less Carnegie units than males; however, the difference was extremely small and not significant. Females, on the other hand, earned more Carnegie units in the standard sequence of mathematics courses than males, but earned less Carnegie units in the advanced sequence of mathematics courses. With respect to racial groups, Asians and Whites significantly earned more Carnegie units than Blacks and Hispanics in the standard and advanced sequences of courses, and Black and Hispanic students earned more Carnegie units in the functional, preformal, and remedial mathematics courses. Finally, Trusty (2002) examined a nationally representative sample of recent college students (N = 2,956 females and 2,747 males) from NELS: 1988, and reported that female students, taking trigonometry, pre-calculus, or calculus in high school, were more likely to choose science and mathematics majors in college. Furthermore, compared to male students, the relationship between courses taken and college major was stronger in mathematics and weaker in science for females.

Several types of instructional practices, such as cooperative learning (Chang & Mao, 1999; Vaughan, 2002), small group instruction (Yackel, Cobb, & Wood, 1991), inquiry-based instruction (Kahle, & Damnjanovic, 1994), hands-on and laboratory inquiry (Lee & Burkham, 1996; Greenfield & Feldman, 1997), and project-based instruction (Barron et al.,1998), appear to have a relationship with the mathematics and science participation and achievement of females and minorities (Clewell & Campbell, 2002). However, the evidence is not entirely clear. For instance, Von Secker and Lissitz (1999) studied the relationship of instructional strategies emphasizing laboratory inquiry, critical thinking, and teacher-centered instruction with science achievement using a sample of 10th grade students (N = 7,642) from the High School Effectiveness Study (HSES) of 1990. They noted that all three instructional practices either enlarged science achievement differences by race and gender or had a weak influence on the reduction of the race and gender gaps. Furthermore, Pine et al. (2006) used an experimental design to compare the effects of science hands-on inquiry with textbook curricula on four performance assessments given to a sample of fifth grade students (N = 1000). They indicated that no curricular effects or significant differences in the performance of male and female students due to either the hands-on inquiry or textbook curricula. Randler and Hulde (2007) also used an experimental design to study the effects of hands-on and teacher-centered experiments in soil ecology on a sample of fifth and sixth grade students (N = 123). However, dissimilar to Pine et al. (2006), they found that students participating in the hands-on experiment scored significantly higher than students that participated in the teacher-centered experiment. Also, female students exhibited superior achievement when compared to male students without a treatment by gender interaction. This indicates that both female and male students benefited from the hands-on experiment.

Finally, the Institute of Education Science (2007) also reviewed evidence from several experimental, quasi-experimental, and correlational studies concerning the instructional practices that improve the mathematics and science interest of students as well as improving their science and mathematics achievement and choices. Evidence indicated that teachers can improve the mathematics and science outcomes of male and female students by contextualizing and personalizing activities (Parker & Lepper, 1992; Cordova & Lepper, 1996; Renninger, Ewen & Lasher, 2002), using multimedia and technology-assisted instruction (Turner & Lapan, 2005;

Linn et al., 2006; Bottge et al., 2007), and using project-based learning (Schneider, Krajcik, Marx, & Soloway, 2002) and cooperative learning (Barron, 2000; Turner & Lapan, 2005).

Course-taking and instructional practices are school features that maintain relevance from elementary to post-secondary schooling; however, financial aid typically has direct application at the post-secondary level unless we refer to financial aid in the context of vouchers to attend private elementary and secondary schools or the provision of direct and indirect cash transfers to low SES families. Avery and Huxby (2004) studied the relationship between financial aid and college enrollment with a sample of high achieving high school students (N = 510) from various racial backgrounds. They noted that students choose institutions that offer larger grants, larger loans, and increased opportunities for work study employment. Additionally, Bettinger (2004) examined the relationship of gift aid or Pell Grants with the persistence of students in college and reported that rates of persistence correlated with the size of the Pell Grant. Finally, Hu (2008) discovered that, in one state university system, the decline in student enrollment in science and mathematics majors for five consecutive years correlated with the commencement of merit-aid programs. He also suggested that students may believe that science and mathematics courses are difficult and negatively impact GPA. Thus, they believe that difficult courses reduce their likelihood of competing for future merit aid. The findings by Avery and Huxby (2004), Bettinger (2004), and Hu (2008) demonstrate the important relationship financial aid has with the opportunities and persistence of racial minorities at the post-secondary level and in mathematics and science majors. Moreover, these findings also confirm evidence from Fenske et al. (2000), Kim (2004), St. John, Paulsen, and Carter (2005), Trent, Lee, and Owens-Nicholson (2006), and Chen and DesJardins (2008).

Societal Forces

Societal forces manifest themselves within the school as characteristics and behaviors of the institution, administration, teachers, parents, and students. They represent the social, economic, and political conditions that are typically outside the control and influence of the school, and include the following: the socio-economic status of the student's family, parental involvement and expectations, and discrimination. We will primarily address parent involvement and expectations in this section; however, we must call attention to the importance of familial socio-economic status and discrimination, and their relationship with the science and mathematics opportunities, achievement, choice, and persistence of female and minority students.

According to Buchmann (2002), socio-economic status consists of parental education, parental occupation, and family income. Yet, socio-economic status may also include additional family background measures, such as family structure (sibship size, birth order, and the number of parents in the home), social and cultural capital (social relationships and socially valued cultural practices, cues, and signals) and home resources (books, computers, and access to the internet) (Buchmann, 2002; Sirin, 2005). Several studies examined the relationship of familial socio-economic status with various cognitive and schooling outcomes including mathematics and science achievement (Secada, 1992; Pong, 1997; Duncan, Yeung, Brooks-Gunn, & Smith, 1998; Cameron & Heckman, 2001; Ermisch & Francesconi, 2001; Yang, 2003; Noble, Norman, & Farah, 2005). These studies, as well as earlier findings (Coleman et al., 1966), suggest that familial socio-economic status explains a disproportionate amount of variation in various schooling outcomes. With respect to discrimination, several studies examined its relationship, in forms including biased teachers and physical and verbal harassment, with participation and achievement among racial minorities (Sanders, 1997; Roscigno, 1999; English, 2002;

Rosenbloom & Way, 2004). It appears that discrimination exists and continues to influence the opportunities, achievement, choice, and persistence of minorities despite substantial efforts during the last 40 years to provide equal access to schooling opportunities for all students.

Parental involvement and expectations refer to the behaviors and practices of parents that may include parental confidence and aspirations, communication to children, participation in school activities, communication with teachers, and their education-related standards, requirements, and demands (Fan & Chen, 2001). A number of articles discussed the relationship of parental involvement and expectations with the educational outcomes of females (Bleeker & Jacobs, 2004; Bhanot & Jovanovic, 2005; Jacobs, 2005) and minorities (Smith & Hausafus, 1998; Jeynes, 2003). Jacobs, Chhin, and Bleeker (2006) analyzed a sample of students from 143 sixth grade classrooms using MSALT. They discovered that the parental gender-stereotyped occupational expectations for their children had a significant relationship with their children's later occupational expectations. Most notably, both the fathers' and mothers' gender-stereotyped occupational expectations for their daughters at age 17 significantly related to their daughters' actual gender-stereotyped occupations at age 28. Yan (1999) examined a sample of eighth grade students (N = 6,459) from the NELS: 1988 dataset, and reported that families of high achieving Black students had higher levels of parental involvement than families of low achieving Black students. Furthermore, families of high achieving Black students, despite having a comparative disadvantage due to income and family structure, demonstrated equal or higher levels of parental involvement when compared to families of high achieving White students.

Parental involvement and parental expectations, together with socio-economic status, represent parental privilege that passes from parent to child and has a very strong relationship with achievement (Jacobs & Harvey, 2005), choice (Dick & Rallis, 1991; David, Ball, Davies, &

Reay, 2003), and the acquisition of high status occupations (Andres & Grayson, 2003). However, Jeynes (2003) cautioned that, while parental involvement appears to be beneficial to minority students, the influence of parental involvement does not benefit all groups equally. That is, variables, such as the absence of cultural incentives and differences in family structures, moderate the relationship between parental involvement and educational outcomes for some minority groups more than others. For instance, Jeynes (2003) indicated that parental involvement has a greater influence on Black and Hispanic students over Asian students because "there are enough educational incentives present in other aspects of Asian American culture so that even without a large degree of parental involvement, students still do relatively well" (p. 215). Finally, Fan and Chen (2001) noted in their meta-analytic review of parental involvement and expectations that socio-economic status may act as a confounding variable in the context of the relationship between parental involvement and academic achievement. Therefore, it is necessary, according to Fan and Chen (2001), to partial out the influence of socio-economic status before forming claims concerning the importance of parental involvement and expectations.

Conclusion

The primary objective of our review is to discuss the current state of the gender and racial attainment disparity, and to identify the variables that relate to the opportunities, achievement, choice, and persistence of females and minorities in mathematics and science. From our review, we identified several critical variables and their relationship to females, minorities, and the fields of science and mathematics. There is some evidence to suggest that prior achievement, socio-economic status, and high quality teaching have a relationship with the educational outcomes across both gender and minority groups in science and mathematics at various levels of schooling. Furthermore, we found evidence that the individual attributes of female and minority students (attitude, commitment, self-efficacy, interest, and self-concept), school features (teacher distribution and socialization, course-taking, instructional practices, and financial aid), and societal forces (parental involvement and expectations) have direct and indirect relationships with the attainment disparity.

Despite the relatively large number of variables listed above and the attractiveness of their implications as potential policy interventions, only a few represent policy interventions based on evidence from rigorous causal research. These policy interventions are school-based and relate to the instructional interaction between teachers and students. According to the literature, teachers should the praise student effort, contextualize instruction, and use of technology-assisted instruction, hands-on inquiry, project-based learning, and cooperative learning as part of classroom mathematics and science instruction. The literature also indicates that these interventions have a positive effect on a student's beliefs, learning goals, learning strategies, interest and motivation, achievement, and participation in mathematics and science courses. The remainder of the variables received mixed and insufficient support from the literature. For instance, we found a lack of clear evidence concerning the relationships of attitude, self-concept of ability, and self-efficacy with student educational outcomes. Additionally, we noted several inconsistencies across the literature with respect to the influence of some instructional practices and parental involvement and expectations on the opportunities, achievement, choice, and persistence of females and minorities in mathematics and science. It is apparent, not only from the review by Oakes (1990), but also from our review 18 years later, that significant gaps continue to exist in the literature. We recommend that policymakers, district leaders, and school leaders act cautiously when interpreting the potential impact of the variables.

Considering the strengths and weaknesses of the literature, we list several suggestions for further research.

First, the literature consists of a rich variety of research methodologies ranging from qualitative, correlational, and quasi-experimental and experimental designs. Unfortunately, the majority of the studies use qualitative and correlational designs. There is a paucity of causal studies that use experimental or quasi-experimental designs with well-matched, equivalent control and treatment groups. While other types of research designs may be helpful in developing promising interventions or providing preliminary findings, they have difficulty separating the effect of the treatment from the characteristics of the participants or rival explanations (National Research Council, 2002). Qualitative and correlational studies are subject to selection bias due to the failure to randomly assign participants to treatment and control groups (Schneider, Carnoy, Kilpatrick, Schmidt, & Shavelson, 2007). The Institute of Education Science (2003) noted that "this leads to erroneous conclusions about the effectiveness of the intervention" (p. 2). Acknowledging this limitation, we strongly encourage the use of more rigorous causal research in the form of randomized controlled experiments to inform policymakers and practitioners about the effectiveness of these interventions in districts, schools, and classrooms.

Second, there is also a paucity of studies that examine racial differences in terms of opportunities, achievement, choice, and persistence in science and mathematics. While small differences do exist between male and female students, the differences between Whites, Blacks, Hispanics, Asians, and other racial and ethnic groups are substantially larger and warrant an augmented share of the research. Therefore, we suggest that research place an increased emphasis on racial minorities. We support this assertion with recent evidence from Levin, Belfield, Muennig, and Roouse (2007) that suggests that investing in the schooling of minorities, especially Black students, is an economic priority considering the high public returns.

Third, it is difficult to fully understand the influence of individual attributes, school features, and societal forces on the educational outcomes of minorities due to group aggregation. Group aggregation is particularly relevant for studies using large-scale, nationally representative datasets; however, it is applicable to any study. It is important to disaggregate or unpack racial and ethnic groups, such as Asians and Hispanics, in order to identify and understand the social, cultural, and behavioral phenomena that influence their educational outcomes. The aggregation of Asians and Hispanics is misleading when considering the variability within each racial and ethnic group (Gutierrez & Rogoff, 2003). For instance, group aggregation assumes that Hispanic and Asian students are homogeneous or that no dissimilarities exist between Cuban and Mexican American students, and between Japanese and Laotian American students. This represents a grave misconception that may lead to erroneous generalizations regarding each racial and ethnic group (see Ngo & Lee, 2007, concerning Southeast Asian American students as model minorities).

Fourth, our literature review is neither exhaustive nor comprehensive because the research concerning the improvement of opportunities, achievement, choices, and persistence of females and minorities in science and mathematics is multi-disciplinary, multi-level, and multi-methodological. Unfortunately, due to the extensive number of studies and reports from different disciplines, levels of schooling, and methodological backgrounds, we could not include all relevant and important topics, and many fell outside the scope of our literature review. For example, we encourage an evaluation of the quantity and effectiveness of interventions used in after-school programs for increasing female and minority achievement in mathematics and science. We also encourage an examination of the role of formative assessment in schools for identifying the performance of underrepresented students in science and mathematics and improving instructional strategies simultaneously. Fifth and finally, we acknowledge that the relationships among females, minorities, and the fields of science and mathematics are extremely complex due to the intersection of social, behavioral, and cultural contexts. We believe that the elimination of gender and racial disparities in science and mathematics will require a multifaceted and multi-level approach that includes interventions at the individual, school, and societal levels, as well as the recognition and application of the complexity of the social, behavioral, and cultural contexts of females and minorities.

Considering the complexity of addressing female and minority attainment disparity, it is apparent that a single context cannot adequately address the disparities nor serve as the single antidote (Ladson-Billings, 1997). However, the emphasis on a single context is evident in the comparative overabundance of literature and theoretical models that lack the simultaneous inclusion of social, behavioral, and cultural contexts. For instance, Kahle, Parker, Rennie, and Riley (1993) and Eccles (2005) presented exceptional behavioral models of the relationship between gender, race, and educational outcomes in the fields of science and mathematics. Both studies, and their corresponding models, represent important contributions. Yet, each model lacks the social and cultural predictors of opportunities, achievement, choices, and persistence. Many studies favor the social and behavioral context while the cultural context of the student, teacher, and classroom are absent or ignored (Fuller & Clarke, 1994).

We do not view the omission of the cultural context as a conspiracy or hidden agenda. In all likelihood, it is a product of the dominance of disciplines, such as psychology, sociology, and economics over anthropology (Ladson-Billings, 2006). Nonetheless, we strongly encourage the inclusion of the cultural context for several reasons beyond the apparent omission. This suggestion, however, may seem at odds with our previous call for an increase in research using randomized controlled experiments. The study of the cultural context requires a qualitative approach due to the nature of culture. Culture refers to the interpretation and application of meaning from artifacts or symbols. Levinson (2000) asserted that culture is the "use of symbols to understand and act upon the world" (p. 2). Levinson (2000) further stated that culture represents "the symbolic meanings expressed through language, dress, and other means, by which people in a society attempt to communicate with and understand themselves, each other, and the world around them" (p. 4). Ladson-Billings (1997) added that culture is "the deep structures of knowing, understanding, acting, and being in the world" (p. 700). Therefore, culture is merely the way an individual learns and applies knowledge.

The addition of the cultural context to rigorous causal research must involve the use of qualitative (and even correlational) research to conceptualize the phenomenon and make available the provisional results to design and implement randomized controlled experiments (Schneider, Carnoy, Kilpatrick, Schmidt, & Shavelson, 2007). The use of qualitative approaches, such as ethnographic and design studies, to studying the cultural context is also applicable when examining the processes and mechanisms of causality after determining the causal agent within a randomized controlled experiment (National Research Council, 2002). Therefore, qualitative approaches to studying the cultural context are critical as *a priori* and *post hoc* analyses. We view them as complimentary to randomized controlled experiments, and as significant components to the entire field that cannot be excluded or omitted.

Recent literature emphasizes the value of the cultural context and it's importance to the science and mathematics instruction for students from bilingual and non-English language households (Ballenger, 1997; Lee & Fradd, 1998; Lee, 2002; Lee, 2005), teacher preparation (Haberman, 1991; Ladson-Billings, 1995; Cochran-Smith, 1995), and teacher professional development (Lee, Hart, Cuevas, & Enders, 2004; Lee, Deaktor, Enders, & Lambert, 2008). These studies present examples of culture as an additional lens to view students and teachers. We need to apply this lens for an alternative view of other facets of schooling, including school counselors and administrators, and their relationships with the opportunities, achievement, choices, and persistence of females and minorities. Finally, it is imperative that school personnel, especially teachers, become cross-culturally and multiculturally competent either through pre-service or in-service training programs. Competent teachers, whether labeled as cross-cultural or multicultural, have the affective, behavioral, and cognitive characteristics to effectively provide instruction to and understand the learning needs of diverse students (McAllister & Irvine, 2000). This is particularly critical to science and mathematics teachers that interact with students from diverse culturally, linguistically, and socio-economic backgrounds.

Cross-cultural and multicultural competency training also has serious implications related to teacher socialization practices (i.e., expectations and beliefs, gender stereotyping, and communication and feedback) and their relationship with the science and mathematics interests and beliefs, achievement, and choices of females and minorities. Although theoretically and conceptually appealing, the evidence from qualitative and correlational research is mixed (Lee, Luykx, Buxton, & Shaver, 2007). Therefore, we suggest, as we did previously, that rigorous causal research and complimentary approaches targeting minorities should receive increased emphasis so as to evaluate promising policy interventions, such as cross-cultural and multicultural competency training. Without systematic evidence, we must be cautious concerning any policy intervention because we have no way of discerning whether the effect is due to the policy intervention, the characteristics of the participants (i.e., students and teachers), or a rival explanation. Bearing in mind the severity of the gender and racial attainment disparity in mathematics and science, we cannot afford ineffective policy interventions at the expense of scarce public resources, our economy, and, most importantly, female and minority students.

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FCR-STEM Female-Minority Initiative
APPENDIX C - Possible Measures for Evaluating the Success of the Plan

POSSIBLE OUTCOME MEASURES for INTENDED IMPACTS

IMPACT 1: STEM Learning and Achievement (Testing only)	**Level of Reporting**	**NOTES**
Increase in....among women and under-represented minorities		
Number and percent of students taking PSAT & PLAN for 9th through 11th Grades	State/district	PSAT (Math Only) and PLAN (Math & Science)
Number and percent of students passing PSAT & PLAN for 9th through 11th Grade	State/district	PSAT (Math Only) and PLAN (Math & Science) Define passing: What is the cutoff score'
Math SAT 10 scores (FCAT-NRT)	State/district	No Science SAT 10 (SAT 10 Is Ending in 2008)
Math and Science FCAT Scores	State/district	Math FCAT will be changed in 2011 to align with the new standards; Science FCAT in 2012.
Math and Science FCAT Scores and by Strand/Cluster	State/district	See above.
Number or percent of students passing end-of-course exams related to STEM	State/district	Math and Science
Number and percent of students taking Math and Science ACT & SAT tests	State/district	
Number and percent of students passing Math and Science ACT & SAT tests	State/district	
Math CLAST scores	State/district	
Number or percent of students participating in district/state STEM-related competitions	District	Science Fair, Mu Alpha Theta, First Robotics, SECME contests, Sunshine Math
IMPACT 2: STEM Choice	**Level of Reporting**	**NOTES**
Increase in....among women and under-represented minorities		
Percent of students declaring STEM-related majors in secondary school	State/district	
Percent of students declaring STEM-related majors in college	State/colleges & universities	As defined by the state
Percent of students declaring majors in STEM-support fields (e.g., Health) in college	State/colleges & universities	Must better define the relation and association, e.g., IT, Forensics, Nursing. Support is defined as STEM related or support
IMPACT 3: STEM Persistence and Completion	**Level of Reporting**	**NOTES**
Increase in...among women and under-represented minorities		
Number and percent of graduates (AS, BS, MS, and PhD) with degrees in STEM fields	State/colleges & universities	
Decrease in...among women and under-represented minorities		
Number and percent of attrition in STEM majors	State/colleges & universities	
Number or percent of attrition in STEM-support majors	State/colleges & universities	
IMPACT 4: Increase Female and Minorities in STEM	**Level of Reporting**	**NOTES**
Increase in...among women and under-represented minorities		
Proportional percent of graduates in STEM fields in College	State/colleges & universities	Example: If 20% of undergraduates are African American students and 10% are engineers, then 20% of the 10% should be Africar
Proportional representation of high achieving students or students in top quartiles in math and science on FCAT	State/district	Comparable percentage among high achievers in middle/high schoc
Proportional percent of females and minorities working in STEM career	State	Would include academia, industry, and other related sectors of employmer

FCR-STEM Female-Minority Initiative
APPENDIX C - Possible Measures for Evaluating the Success of the Plan

POSSIBLE OUTCOME MEASURES for OUTPUTS

OUTPUT 1: Increase Student Access/Opportunity in STEM	**Level of Reporting**	**NOTES**
Increase in...among women and under-represented minorities		
Number of high schools offering calculus, physics, AP math and science, chemistry, etc	State	High School
Number of high schools offering science lab experiences	State	High School
OUTPUT 2: Increase Student Participation in STEM (i.e., math/sci course taking)	**Level of Reporting**	**NOTES**
Increase in...among women and under-represented minorities		
Average number of math and science courses taken by students in secondary school	State/District	All math and science courses, regardless of level
Number and percent of students taking advanced math courses annually in high school	State/District	Define advanced as Honors, Advanced, Gifted, Among other IB, AP (3 or above)
Number and percent of students taking advanced science courses annually in high school	State/District	Define advanced as Honors, Advanced, Gifted, Among other IB, AP (3 or above)
Number and percent of students taking higher level math courses in secondary school	State/District	Higher Level is Beyond Alg 1 and Geometry (i.e., Algebra II) and beyond Biology
Number and percent of students taking higher level science courses in secondary school	State/District	Higher Level is Chemistry, Physics, and Other
Number and percent of students passing advanced math courses annually in high school	State/District	Passing is 'C' Or Above
Number and percent of students passing advanced science courses annually in high school	State/District	Passing is 'C' Or Above
Number and percent of students passing higher level math courses in secondary school	State/District	Passing is 'C' Or Above
Number and percent of students passing higher level science courses in secondary school	State/District	Passing is 'C' Or Above
STEM Grade Point Average (GPA)	State/District	At Elementary, Middle and High School Level
Number and percent of students taking Algebra I and Geometry in Middle School	State/District	
Number and percent of students taking and passing Algebra I on the first try	State/District	Middle and high school
Decrease in...by women and under-represented minorities		
Number and percent of HS graduates needing math and science remediation in college	State/District	An examination of the role of remediation in Community Colleges and HBCUs is needed
OUTPUT 3: Increase Student Career Awareness in STEM	**Level of Reporting**	**NOTES**
Increase in...among women and under-represented minorities		
Ratio of students per career/guidance counselor	District	Student to counselor ratio recommended by the ASCA is 250 to 1
Number of school STEM-related career activities offered per year, aimed to increase female/minority participatior	School	emphasis on in-class engagement
Student knowledge of and interest in STEM careers	State	Through student surveys; if possible, add questions to an existing instrumer
OUTPUT 4: Increase Student Engagement in STEM (i.e.., math/sci outreach, programs, afterschool)	**Level of Reporting**	**NOTES**
Increase in...among women and under-represented minorities		
Number and percent of students involved in STEM extracurricular activities (e.g., Science Olympiad, Future Cities, state science fair, university programs	School	requires business and community support - e.g., cover cost:
OUTPUT 5: Increase Individual Student Attributes (i.e., resilience, work ethic, good study habits, interest, attitude toward math/sci)	**Level of Reporting**	**NOTES**
Increase in...among women and under-represented minorities		
Percent of students with more positive attitude towards math/science courses/activities	State/District	Interest measure (student survey)
Number and percent of students who failed Algebra I but passed on second tr	State/District	Resilience measure

FCR-STEM Female-Minority Initiative
APPENDIX C - Possible Measures for Evaluating the Success of the Plan

POSSIBLE OUTCOME MEASURES for OUTPUTS (continued)

OUTPUT 6: Increase administrator and faculty math and science content and pedagogy	**Level of Reporting**	**NOTES**
Increase in...among women and under-represented minorities		
Number of administrators/teachers successfully completing X or more hours of math/science professional development trainin	State	X hours to be defined (possibly 80 or more hours in a year) (training
Percent of students taught math/science courses by a teacher certified in field	State	Elementary, middle, high school (certificate)
Percent of students taught math/science by math/science specialists	State	Elementary, middle, high school (degrees in field))
OUTPUT 7: Increase cultural competence among administrators and faculty	**Level of Reporting**	**NOTES**
Increase in...among women and under-represented minorities		
Percent of administrators and math/science teachers (middle, high, postsecondary) who are male/female	State/district/ colleges & universities	
Percent of administrators and math/science teachers by ethnicity	State/district/ colleges & universities	
Percent of districts with a cultural competency plan	State	Organizational values, commitment to provide culturally competent instruction, governance, planning, evaluation staff dev, organizational infrastructure, svcs/interventio
Percent of administrators/faculty completing X hours of cultural competency training over last three years	District	
Percent of students who feel that their administrators/teachers/faculty are culturally competent	State/district	Use student survey
OUTPUT 8: Increase academic and workforce alignment	**Level of Reporting**	**NOTES**
Increase in...among women and under-represented minorities		
Number and percent of university STEM-degree graduates in a STEM-related job within a yea of graduatior	State/colleges and universities	Public Universities/Community Colleges only
Percent of HS and adult education students not pursuing college who obtain industry certification in STEM field	State/District	
Percent of community college students receiving a STEM-related or STEM-support bachelor's degree	State/community colleges	Community College BS Degrees
OUTPUT 9: Increase adult, family, and peer support for students	**Level of Reporting**	**NOTES**
Increase in...among women and under-represented minorities		
Number and percent of activities for parents, such as family nights, that are STEM-related	School/District	minority and gender focus is priority; baseline data compared w/current - # and % increase
Number and percent of parents, adults, volunteers, and mentors with STEM experience	School/District	baseline data compared w/current - # and % increase
Number of STEM related afterschool programs	School/District	Includes traditional afterschool programs, YMCA, etc.
Number of parental workshops that provide parents for helping students with math/science	School/District	
Number of dollars supporting STEM-related activities (PTO funds, grants, etc	School/District	

FCR-STEM Female-Minority Initiative
APPENDIX C - Possible Measures for Evaluating the Success of the Plan

POSSIBLE OUTCOME MEASURES for OUTPUTS (continued)

OUTPUT 10: Function of STEM Pipeline (or pipeline facilitation from K-20)	**Level of Reporting**	**NOTES**
Increase in...among women and under-represented minorities		
Number and percent of students selecting STEM-related careers in high school who are admitted to STEM majors in college	District/University	Measure leakage; decrease/increase in interest (baseline data compared w/current school and labor market - # and % increase
Percent of undergraduate and graduate students pursuing STEM fields with financial assistance	University	
OUTPUT 11: Shift or establish resources to support STEM goals (i.e., state, district, and school levels)	**Level of Reporting**	**NOTES**
Increase in...among women and under-represented minorities		
Dollar amount of line-item legislative appropriations supporting special initiatives/programs designed to increase participation and achievement in STEM field	State	baseline data compared w/current - # and % increase
Dollar amount of external grants that support STEM education (K-20)	State/districts/ colleges and universities	baseline data compared w/current - # and % increase
Dollar amount of industry contributions (cash and in-kind) to STEM education from K-2	State	baseline data compared w/current - # and % increase
OUTPUT 12: Establish or Increase accountability practices for women and minorities in STEM (K-20)	**Level of Reporting**	**NOTES**
Increase in...among women and under-represented minorities		
Percent of districts requiring STEM course and achievement data equity reporting	State	
Percent of colleges/universities requiring diversity impact statements from faculty in annual reports	State	

APPENDIX D

FCR-STEM Female and Minority Initiative
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Susan Borland[1]*
Education Manager
Challenger Learning Center of Tallahassee

Consuelo Boronat*
Director, Title V
Florida International University

Beverly Bower
Associate Professor of Higher Education
Florida State University

Tommy Chambers
President
Aim2Win Solutions, LLC

Paula Cifuentes
Faculty Coordinator of Math & Science
Lake City Community College

Todd Clark*
Deputy Director
Office of Mathematics and Science
Florida Department of Education

Leah Cook*
Program Director
Girls Get IT

Mary Jane Dann
Principal
Douglas L. Jamerson, Jr. Elementary School

Jimmie Lee Davis, Jr.*
Senior Software System Engineer
MITRE Corporation

Anne Donnelly
Director
South East Alliance for Graduate Education and the Professoriate
University of Florida

Christina Drake*
Research Engineer
Lockheed Martin Missiles and Fire Control

Patrick Enderle
Research Assistant and Doctoral Student in Science Education
Florida State University

Adeola Fayemi
Director
Office of Equity & Access
Florida Department of Education

Yvonne Fonnett
Educator
Dr. Phillips High School
Orange County Public Schools

Penelope Haskins
President and CEO
Radiation Technologies, Inc.

Monica Hayes*
Regional Director
National Math and Science Initiative

Jacqueline Hightower
Coordinator of Academic Affairs and
Advisor to the Environmental Sciences Student Organization (ESSO)
Florida A&M University

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1 *** Also served on the Advisory Board**

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FCR-STEM Female and Minority Initiative Work Group Members

Shouping Hu*
Associate Professor of Higher Education
Department of Educational Leadership and Policy Studies
Florida State University

Gladis Kersaint
Associate Professor of Mathematics Education
University of South Florida

Charlene Kincaid
Coordinator of Mathematics (K-12)
Santa Rosa County School Board.

Kathy Leroy
Chief Officer of Math & Science
Duval County Public Schools

Karen Martinoff
President and CEO
Hayes e-Government Resources, Inc.

Lisa McClelland
Doctoral Student in Higher Education
Florida State University and
Former Director of the McNair Program
Florida A&M University

Mike McKee
Director
GO-GK-12
University of Central Florida

Kimberly Moore
Chief Executive Officer
WORKFORCE plus

Louise Muscarella-Daxon
Test/Chair
Miami-Edison Senior High School
Miami-Dade County Public Schools

Jeffery Murfree
Director of Prek-12 STEM Educator Professional Development
Teacher Resource Network/The Teacher Channel

Nirmala Ramlakhan
Education Project Manager
Workforce Central Florida

Ava Rosales
Instructional Supervisor, Curriculum and Instruction (Science)
Miami-Dade County Public Schools (M-DCPS)

Walter Secada
Professor, Curriculum & Instruction,
University of Miami

Jacqueline Smith
Director, Minority Engineering & Computing Science Center for Academic Advancement
University of Central Florida

Berrin Tansel
Associate Director, Center for Diversity in Engineering and Computing and
Associate Professor, Civil and Environmental Engineering.
Florida International University

Sylvia Wilson Thomas
Assistant Dean
College of Engineering
University of South Florida

Sharisse Turnbull
Graduate Assistant in Instructional Systems Design
Florida State University

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FCR-STEM Female and Minority Initiative
Work Group Members

Biographies

Julie Alexander is the Director of Educational Services and Articulation for the Florida Department of Education's Division of Community Colleges. Her primary responsibilities include admissions-related issues, articulation, dual enrollment, residency, bill analysis and policy recommendation and interpretation. Ms. Alexander has previously served as Bureau Chief of Special Projects in the Division of Workforce Education; Policy Analyst in Planning and Institutional Research at the Florida Board of Governors; Assistant Administrator of the Statewide Course Numbering System, and as an art teacher in Texas and Botswana, Africa. Ms. Alexander holds a Master's degree in Education in Instructional Technology from the University of West Florida and a Bachelor's degree in Fine Arts in Art Education from University of North Texas.

Angela Birkes is a Research Specialist for the Research and Evaluation Department of Georgia's DeKalb County School System, where she serves on the Research Review Committee and makes recommendations on research proposals. She formerly was a Senior Research Associate for the P-16 Data and Analysis Systems Division where she was the project manager for the Middle School Achievement and Interest in Mathematics and Science (MS-AIMS) initiative and a member of the Data and Analysis Systems team supporting the P-16 Data Mart project. Dr. Birkes also has served as the Associate Director of the Southern Regional Education Board's Adult Learning Campaign established to encourage adults to consider postsecondary education. She also has provided consulting/project management services for SECME Inc. and the Georgia Space Grant Consortium at the Georgia Institute of Technology's College of Engineering, where she has been research faculty. Dr. Birkes earned her mechanical engineering degree at Howard University and both master's and doctoral degrees in civil engineering from the Georgia Institute of Technology.

Susan Borland is the Education Manager of the Challenger Learning Center of Tallahassee, where she engages students, especially females and minorities, in STEM subjects through space science and simulation. She has developed STEM-oriented curricula and provided STEM programming for Title I and 21st Century grant-funded schools in Leon County. Ms. Borland has a wide range of experience providing in-service training to teachers through Challenger Pre-Mission workshops, Aerospace education workshops, NASA CONNECT and Careers in Engineering, among others. Ms. Borland received the 2007 Kid's Incorporated Children's Champion award primarily for her work with underserved populations. She is certified to teach health, middle school science, biology, and earth science.

Tommy L. Chambers is the President of Aim2Win Solutions, LLC, a small professional services company that provides management and technology consulting, professional and personal development services, and professional speaking services. He is also Program Director of the Student Information System at Jobs for the Future in Boston, Massachusetts. Before starting Aim2Win Solutions, Mr. Chambers served as the Director of the Early College High School Initiative at SECME, Inc. at the Georgia Institute of Technology. He has extensive software engineering, technology, and technical management experience, including lead software engineer and flight controller at NASA's Jet Propulsion Laboratory, software engineer and software engineering manager at Skytel/MCI, computer programmer at the U.S. Geological Survey, and President of Intelogix Corporation, a software company in Acworth Georgia.

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Mary Jane Dann is Principal of Douglas L. Jamerson, Jr. Elementary School, a diverse inner city public school in St. Petersburg, Florida which has earned the Magnet Schools of America "Magnet School of Excellence" award for the last two years. The focus on engineering and mathematics in an elementary school gives students real world opportunities to think and analyze critically and quantitatively. Students engage in high-level learning experiences in engineering using the Jamerson Design Process, where students define problems and then research, design, construct, test, analyze, and communicate solutions. The staff, with University of South Florida Engineering direction, has created its own integrated engineering curriculum that is standards based and focuses on basic engineering concepts as well as provides awareness of nontraditional STEM career professions.

Jimmie Lee Davis, Jr. is a Senior Software System Engineer for the MITRE Corporation and serves on the Space Florida Board of Directors. Established to create new technology for the Department of Defense, MITRE currently manages research and development centers for the Department of Defense, the Federal Aviation Administration and the Internal Revenue Service. Dr. Davis has an impressive record of leadership in the minority technology and science community. He has worked with organizations that reach out to young people, including the Harriet G. Jenkins Predoctoral Fellowship Program Review Committee and the J.C. & Frankie Watts Foundation Inaugural Full Impact Leadership Academy. As an undergraduate at Morehouse College, he founded a successful outreach program with the National Society of Black Engineers. Dr. Davis holds doctorate and master's degrees in Electrical Engineering from the University of Massachusetts Lowell.

Anne Donnelly is the Director of the South East Alliance for Graduate Education and the Professoriate at the University of Florida, one of a national network of National Science Foundation (NSF) Projects designed to increase the diversity of the nation's faculty in science, engineering, and mathematics. She has served in this capacity for the past 10 years, during which time 22 science, engineering, and mathematics (SEM) departments have graduated 23 Ph. D. recipients and 7 Master's degree recipients. Dr. Donnelly also serves as the Associate Director of Education for the Particle Engineering Research Center, a graduated NSF ERC, that offered research experiences to over 700 undergraduate students over 10 years. This program consistently outperformed national averages for inclusion of women and minorities.

Christina Drake is a Research Engineer for Lockheed Martin Missiles and Fire Control where she is a member of the Sensor Technology and Materials group. Dr. Drake holds a Ph.D. in Materials Science and Engineering from the University of Central Florida and a B.S., cum laude, in Materials Science and Engineering from the University of Florida where she worked as a mentor, tutor, and camp counselor with the Step-UP program. Based at the UF College of Engineering, the Step-UP program aims to increase minority and female retention in the engineering disciplines, through middle and high school summer camps, and mentoring and tutoring for freshman and sophomore engineering students. At UCF, she was a National Science Foundation GK-12 Fellow helping low-performing public schools transform science instruction for students who have traditionally underperformed in that subject area. Her continuing teaching interests involve working with minority and female students in the sciences.

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Patrick Enderle is a Research Assistant and Doctoral Student in Science Education at Florida State University, where he is involved in a five-year NSF project aimed at understanding the effectiveness of different professional development approaches related to inquiry teaching practices. His other research interests include reforming undergraduate science education and evolution and Nature of Science education. Mr. Enderle is originally from North Carolina, where he earned a Bachelor's and Master's degree in Molecular Biology from East Carolina University. His teaching experience includes high school, community college, and large undergraduate courses in different aspects of biology. In Florida, Patrick has assisted in developing the new Sunshine State Standards in science and has offered professional development experiences related to evolution education.

Jacqueline Hightower is a Coordinator of Academic Affairs and Advisor to the Environmental Sciences Student Organization (ESSO) in the Academic Affairs – Office of Accreditation Reaffirmation at Florida A&M University (FAMU), where she is a student advocate and champion of environmental sustainability. After working for ten years as a Technology Analyst in the corporate sector, she was awarded a one year sabbatical to teach Information Systems courses at FAMU. Upon completing her graduate degree, she joined the Environmental Sciences Institute (ESI) , where she secured grant funds and in-kind donations to support ESSO initiatives including a science poster competition for local elementary schools. Ms. Hightower was selected FAMU's "*Advisor of the Year*" after one year in her current position. Over the last 14 months she co-chaired the planning committee that brought *Focus the Nation Teach-In on Global Warming Solutions for America* to FAMU.

Monica Hayes, is the former Regional Director with the National Math and Science Initiative. She is also the former Director of the K-20 Office of Equity, Global and International Education in the Florida Department of Education, where she managed Florida's $7.125 million dollar partnership contract with the College Board, and the former statewide Director for Florida's College Reach-Out Program (CROP), a legislatively funded program ($3.92M) designed to reach at risk minority and underrepresented students. Ms. Hayes is an accomplished public speaker on a range of topics related to education, closing the achievement gap, and cultural competency. She believes that the primary mission of educational institutions should include modeling cultural competency, closing the achievement gap for minority and underrepresented students, and setting high expectations that enable all students to become well-rounded and fully functioning members of our communities.

Shouping Hu is an Associate Professor of Higher Education in the Department of Educational Leadership and Policy Studies at Florida State University. He received an M.A. degree in economics and a Ph.D. in higher education from Indiana University. Dr. Hu's primary research interest is to identify factors influence student postsecondary decisions, including the choice of and persistence in the STEM fields.

Charlene Kincaid is the Coordinator of Mathematics (K-12) for the Santa Rosa County School Board. Over the years, Ms. Kincaid has received numerous recognitions and awards as a mathematics educator. She earned the Presidential Award for Excellence in Mathematics and Science Education (secondary mathematics) as a state and national awardee. She was named a Tandy Technology Scholar Teacher by RadioShack, an Associate Master Teacher for the State of Florida, and an Honors Master Teacher for NEWMAST (NASA and NCTM sponsored

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Mathematics and Science Teacher Education Workshops). She has served on the Florida Department of Education's Standards Writing Team for both the 1996 and 2007 mathematics standards; the Region I Planning Team for the Statewide Systemic Initiative in Mathematics; the Office of Mathematics and Science Advisory Committee; and the Florida Comprehensive Assessment Test Content Advisory Committee. Ms. Kincaid was a co-teacher, facilitator, and curriculum developer of the Flight Adventure Deck project, a hands-on mathematics and science program for middle school students designed by a partnership of Santa Rosa and Escambia County Schools and the National Naval Aviation Museum.

Karen Martinoff is President and CEO of Hayes e-Government Resources, Inc. headquartered in Tallahassee, Florida. As an entrepreneur, she has built Hayes from a small company into one of the leading woman-owned minority technology businesses in Florida. Hayes e-Government Resources, Inc has provided information technology services and solutions to State of Florida government agencies, local governments, school districts and commercial businesses. Currently, Hayes is the prime contractor for the Florida Department of Education's Florida Information Resource Network (FIRN2) serving over two million users in K-12 schools throughout the state of Florida. As prime contractor, Hayes engineered the combined resources and industry expertise of major communication providers AT&T, Embarq and Verizon to serve Florida's education community.

Lisa McClelland is a doctoral student in higher education at Florida State University, where her research interests include disparities in the representation of minorities and females in STEM fields. Ms. McClelland has worked in higher education for over sixteen years. During the last ten, she served as Director and Assistant Professor of the Ronald E. McNair Postbaccalaureate Achievement program at Florida A&M University. The McNair program is designed to increase the attainment of Ph.D. degrees by students from underrepresented segments of society by involving low-income, first-generation undergraduate students in research and other scholarly activities.

Kimberly Moore has spent nearly a decade in the workforce development arena. She currently serves as the Chief Executive Officer of WORKFORCE plus, becoming the youngest person, the first African-American and the first woman to hold this top position. WORKFORCE plus provides leadership and support for a workforce development system throughout Gadsden, Leon and Wakulla Counties. In her position as Chief Executive Officer, Ms. Moore is responsible for a $6 million budget, a staff of eleven and 55 employees under contract.

Jeffery Murfree is the director of Prek-12 STEM Educator Professional Development for the Teacher Resource Network/The Teacher Channel. Jeff has 18+ years of experience working in the prek-12 STEM education community and has strong relationships with this community and its national partners. Jeff has provided professional development in STEM to teachers, students and school and school system administrators throughout the country. He is a former poultry scientist and high school science teacher. His ten years working for SECME, highlights his career working with under-served populations and women, preparing them for entrance into STEM education and careers.

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Ava D. Innerarity Rosales is an Instructional Supervisor for Miami-Dade County Public Schools (M-DCPS) Curriculum and Instruction (Science) and an adjunct professor for Miami Dade College. She is currently a doctoral candidate at Curtin University of Technology, Perth, Australia researching the effects of pre-college programs on the attitudes and achievement of minority students in mathematics and science. For the past 20 years, Ms. Rosales has worked with M-DCPS as a science teacher and instructional leader. During her tenure with the district, she has been the district liaison for the Museum of Science Girls Raising Interest in Science and Engineering (RISE) program and coordinated SECME (formerly the Southeastern Consortium for Minorities in Engineering) district-wide, while collaboratively securing over $1 million to support pre-college STEM programs for M-DCPS minority students, teachers, and parents.

Berrin Tansel is the Associate Director of Center for Diversity in Engineering and Computing at Florida International University and an associate professor of Civil and Environmental Engineering. Dr. Tansel was named the 2007 Engineer of the Year by the American Society of Civil Engineers Miami-Dade Branch. She is an elected Fellow of the American Society of Civil Engineers (ASCE), an elected Diplomate of American Academy of Water Resources Engineers, and a Board Certified Environmental Engineer by the American Academy of Environmental Engineers. Before joining FIU, Dr. Tansel worked at the Massachusetts Water Resources Authority on the Boston Harbor clean up project and the Center for Environmental Management at Tufts University. She has been a consultant for PEER Consultants, Soap and Detergent Association, SCS Engineers, City of Pompano Beach, and ERM-South.

Sylvia Wilson Thomas is Assistant Dean in the College of Engineering at the University of South Florida, where she strengthens relationships and programs with industry, government and academia to increase the quantity, quality and diversity of students, faculty and staff. She has been a strong advocate for women in engineering as an instructor and mentor of engineering students, speaker for the Girl Scouts and parent-teacher organizations, and member of the Osceola High School Engineering Academy Advisory Board. Dr. Thomas also serves on the Florida Education Fund Board of Directors and works with the Society of Women Engineers (SWE), National Society of Black Engineers (NSBE), Society of Hispanic Professional Engineers (SHPE), the IEEE Women Affinity group, Junior Engineering Technical Society (JETS), National Engineer's Week, First Robotics, and other student organizations.

Sharisse Turnbull is a graduate assistant at FCR-STEM, where she has provided research support for projects related to Florida's new math and science standards and a professional development initiative designed to help teachers improve their instruction in the science and mathematics content areas. Sharisse was introduced to opportunities in the STEM field as a high school student. While completing her bachelor's degree in Industrial Engineering, she worked at NAVSEA as a co-op student and Human Factors Engineering Trainee. Currently, she is completing a Master's degree in Instructional Systems Design at Florida State University. Her long-term interests are improving student learning and instruction in mathematics on a broad scale and expanding STEM opportunities for females and minorities.

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FCR-STEM Female and Minority Initiative Work Group Members

Female & Minority Initiative Staff
Florida Center for Research in Science, Technology, Engineering and Mathematics
Florida State University

Laura Hassler Lang is the Director of the Learning Systems Institute and Associate Professor of Educational Leadership and Policy Studies at Florida State University. She is a co-principal investigator for the new state-funded Florida Center for Research in Science, Technology, Engineering and Mathematics (FCR-STEM), a co-principal investigator for Florida PROMiSE, a new math and science partnership created to support teachers and principals in the adoption of Florida's new mathematics and science standards, and a former middle school principal and special education teacher in Florida. Dr. Lang's research focuses on improving learning and performance in K-12 schools, with an emphasis on instructional leadership, professional development, data-driven decision making and interventions related to reading, science and mathematics.

Faye Jones is the project manager for the Female and Minority Initiative at FCR-STEM. She is a doctoral candidate in the Department of Educational Leadership and Policy Studies and the higher education program at Florida State University, where her research has focused on higher education administration, departmental productivity, leadership and gender/race differences in choice and persistence in postsecondary education. Faye has over 10 years of professional experience in higher education management in finance, budgeting, human resources, auditing, evaluation, and performance monitoring of individual faculty and academic departments.

W. Joshua Rew is a graduate assistant for the Female and Minority Initiative at the FCR-STEM. He is a doctoral student in the Socio-cultural and International Development Education Studies program at Florida State University, where he is studying the effects of school leadership on student achievement and organizational performance in developing countries and the relationship between education inequality and socio-economic status in Vietnam, South Africa, and the United States.

Christine Johnson is Assistant Director for Administration at FCR-STEM. She has over 25 years of experience in public policy, research, evaluation, and program administration related to education and human services. For the past eight years, she has managed policy, research and technical assistance projects related to K-12 education and welfare reform at the FSU Learning Systems Institute, including the $1.5 million Multi-University Reading, Mathematics and Science Initiative (MURMSI).

Danielle Sherdan is the Assistant Director for Technical Assistance at FCRSTEM, where she has been working with the Florida Department of Education and Florida's school districts on the implementation of Florida's new mathematics and science standards and designing professional development for principals and teachers. Dr. Sherdan holds a doctorate in Biological Science from Florida State University, with a specialization in plant physiology and molecular biology and has taught elementary and middle school science as a National Science Foundation Graduate K-12 Fellow.

P-4: THE PRISM PROJECT

The PRISM PROJECT

Promoting Regional Improvement in Science & Math

The PRISM Project unites business and educational communities in **P**romoting **R**egional **I**mprovement in **S**cience and **M**ath – it is a STEM (Science, Technology, Engineering, and Math) initiative. PRISM works collaboratively with the Central Florida School Boards' Coalition – made up of ten school districts serving over 830,000 students.

The Vision is to make Central Florida the state and global leader in science and mathematics education leading to more STEM related businesses and employment. Its Mission is to enhance Kindergarten through 12th grade STEM education and increase the supply of post secondary STEM graduates critical to retain related businesses and industries.

THE BUSINESS CASE

John Glenn, Commission Chairman, National Commission on Mathematics and Science Teaching for the 21st Century stated, "*...the future of our nation and people depends not just on how well we educate our children generally, but on how well we educate them in mathematics and science specifically.*"

STEM related industries are critical to our future community, state, and national economic growth and national security. STEM related businesses and industries are struggling to find qualified employees to meet growing needs – students are missing opportunities to fill these needs and realize the earnings and quality of life opportunities they provide.

THE PRISM PROJECT METRICS

PRISM objectives focus on specific learner outcomes developed jointly with the participating school districts – aiming to increase enrollments in higher level math and science courses as well as State and National examination results – and sharing accountability for success. We will judge success against a long list of improvements ranging from enrollment in International Baccalaureate and Advanced Placement programs to improved scores on standardized tests to completion of higher math and science courses in earlier grades to increased participation in state and national science competitions.

THE PRISM PARTNERS

PRISM'S growing list of partners are: Central Florida School Boards' Coalition, Florida High Tech Corridor Council, Orlando Science Center, Workforce Central Florida, Orlando Regional Chamber of Commerce, Lake Sumter Community College, Lockheed Martin, Electronic Arts, National Retail Properties, Progress Energy, Realty Capital, Regions Bank, Walt Disney World, University of Central Florida, Valencia Community College, Seminole State College of Florida, DeVry University, Daytona College, and the Florida Department of Education.

PRISM STRATEGIES
AUGMENTING K-12 STEM TEACHING AND CURRICULUM

We believe STEM education success will be driven by public-private partnerships between business and industry and our school systems. To this end, we link the business community to school leaders, teachers, and students through recognition and reward programs, internships, and outstanding STEM education lesson plans and classroom practices to help students learn relevant science and math concepts leading to exciting and rewarding STEM higher education and career opportunities.

PRISM's strategies are:

- Recognize outstanding math and science teachers who share best practices with other teachers within their districts and include selected best practice presentations on the PRISM Repository

- Select and compensate a special group of these honored teachers to:
  - *Serve industrial internships at leading Florida technology companies* to enhance practical industrial knowledge and share it with other teachers throughout the region
  - Demonstrate and lecture on specific STEM areas of expertise and interest and include in the PRISM Repository
  - Work with leading technology companies to identify key knowledge, attitudes, and skills needed for selected job categories and link to college requirements and K-12 programs

- Establish PRISM as a primary conduit for STEM outreach between industry and the school districts in doing the following:
  - Establish a STEM outreach program aligned and integrated into the schools' curriculum plan, and assist in training for its use, and provide the *mechanism to scale the magnitude and breadth of Industry outreach.*
  - Develop a set of compelling in-school science projects and lectures, geared at inspiring students to pursue careers in STEM-related fields. Create "shrink-wrapped" demonstration materials for affordable, scalable deployment. Leverage PRISM industry partners to provide compelling role models for in-class presentations.
  - Establish linkage between STEM formal education goals and informal learning objectives, enabling area organizations (Orlando Science Center, etc.) to provide content and facilitate outreach.
  - Leverage existing successes by partnering with best of breed ongoing projects and organizations (for example, UCF's ISTF program)

- Develop a PRISM repository of experiments and best practices that can be easily utilized across the region. Organize and "key-word tag" the repository content by learning objectives, subject matter, and grade applicability for easy utilization.

- Provide incentive programs for students to take more higher level math and science courses and compete in regional, state, and national competitions

    - Recognize outstanding and most improved math and science students beginning in middle school who meet special PRISM Scholar criteria for academic rigor and success.
    - Select and compensate a special group of students to serve internships in STEM industries after eleventh grade and have them share their experiences with fellow students
    - Provide matching funds for middle and/or high school students to participate in math, science, and engineering competitions and incorporate projects for recognition on the PRISM Repository

WHY SHOULD YOU GET INVOLVED WITH PRISM?

In the past three years, it has recognized 92 outstanding math and science teachers who shared best practices with other teachers in their districts and 170 outstanding and most improved students. Seventy-five thousand dollars in matching grants have been provided to districts helping them increase middle school student participation by thousands of students in science and math competitions. And these recognitions are leveraging the use of more hands on, relevant teaching and student learning.

WHAT MAKES PRISM ONE OF A KIND?

- PRISM is a unique regional partnership of businesses and ten school districts working as partners now to enhance STEM teaching and learning.

- PRISM is unique in having an honored corps of outstanding teachers prepared to work with business persons to improve and integrate more effectively their current STEM education programs in the schools.

- PRISM is unique in having an honored corps of outstanding teachers prepared to share best practices in STEM education directly linked to workforce needs.

- PRISM is unique in having an honored corps of outstanding and most improved middle and high school students prepared to share their work and experiences with fellow students.

- PRISM is unique in having a Committee of instructional leaders from ten school districts meeting every other month with PRISM members to help assess progress of current programs, identify future needs, and insure PRISM program implementation.

- PRISM is unique in having student goals and objectives and means of assessment jointly framed by both business and school districts driving its planning and system of accountability.

X-1: References

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X-2: Participating LEA Allocations

Agency Numbers	School Districts	LEA Percent of Title I Funds	Allocation Based on: $ 350,000,000.00	Allocation
010	ALACHUA	1.15626%	4,046,902.52	4,046,903
015	P.K. YONGE SCHOOL	0.01916%	67,045.46	67,045
020	BAKER		0.00	0
030	BAY	0.99084%	3,467,930.57	3,467,931
040	BRADFORD	0.12912%	451,913.82	451,914
050	BREVARD	2.11158%	7,390,533.09	7,390,533
060	BROWARD	10.67553%	37,364,356.22	37,364,356
070	CALHOUN	0.08563%	299,708.15	299,708
080	CHARLOTTE	0.40370%	1,412,965.98	1,412,966
090	CITRUS	0.55177%	1,931,206.05	1,931,206
100	CLAY	0.51873%	1,815,552.98	1,815,553
110	COLLIER	1.14942%	4,022,977.43	4,022,977
120	COLUMBIA	0.37287%	1,305,031.82	1,305,032
130	DADE	20.84689%	72,964,103.15	72,964,103
140	DESOTO	0.31526%	1,103,395.27	1,103,395
150	DIXIE	0.12090%	423,134.04	423,134
160	DUVAL	6.57215%	23,002,508.67	23,002,509
170	ESCAMBIA	2.39247%	8,373,647.14	8,373,647
180	FLAGLER	0.23684%	828,941.12	828,941
190	FRANKLIN	0.06494%	227,283.60	227,284
200	GADSDEN	0.47567%	1,664,855.67	1,664,856
210	GILCHRIST	0.08053%	281,850.30	281,850
220	GLADES	0.04672%	163,510.08	163,510
230	GULF	0.06359%	222,580.40	222,580
240	HAMILTON	0.12765%	446,758.21	446,758
250	HARDEE	0.28700%	1,004,502.45	1,004,502
260	HENDRY	0.38149%	1,335,208.75	1,335,209
270	HERNANDO	0.63000%	2,205,009.56	2,205,010
280	HIGHLANDS	0.63419%	2,219,664.38	2,219,664
290	HILLSBOROUGH	7.58504%	26,547,638.98	26,547,639
300	HOLMES	0.14551%	509,298.69	509,299
310	INDIAN RIVER	0.47974%	1,679,076.16	1,679,076
320	JACKSON	0.25337%	886,784.54	886,785
330	JEFFERSON	0.06910%	241,837.43	241,837
340	LAFAYETTE	0.04356%	152,444.50	152,444
350	LAKE	1.15942%	4,057,974.58	4,057,975
360	LEE	2.59694%	9,089,305.39	9,089,305
370	LEON	0.98449%	3,445,700.82	3,445,701
685	FAMU LAB SCHOOL	0.01443%	50,503.22	50,503
686	FSU LAB SCHOOL		0.00	0
380	LEVY	0.32099%	1,123,479.32	1,123,479
390	LIBERTY	0.04455%	155,933.09	155,933
400	MADISON	0.16041%	561,439.93	561,440
410	MANATEE	1.46732%	5,135,604.41	5,135,604
420	MARION	1.94611%	6,811,399.42	6,811,399
430	MARTIN	0.36990%	1,294,662.60	1,294,663
440	MONROE	0.19531%	683,579.91	683,580
450	NASSAU	0.20158%	705,530.92	705,531
460	OKALOOSA	0.75000%	2,624,989.37	2,624,989
470	OKEECHOBEE	0.24180%	846,309.02	846,309
480	ORANGE	6.75988%	23,659,585.51	23,659,585
490	OSCEOLA	1.64413%	5,754,456.86	5,754,457
500	PALM BEACH		0.00	0
687	HENDERSON SCHOOL	0.07733%	270,669.75	270,670
510	PASCO	2.45188%	8,581,573.06	8,581,573
520	PINELLAS	4.53564%	15,874,741.83	15,874,742
530	POLK	4.05727%	14,200,429.94	14,200,430
540	PUTNAM	0.65488%	2,292,079.71	2,292,080
550	ST. JOHNS	0.33550%	1,174,252.76	1,174,253
560	ST. LUCIE	1.41428%	4,949,987.06	4,949,987
570	SANTA ROSA	0.57181%	2,001,324.88	2,001,325
580	SARASOTA	1.00279%	3,509,768.78	3,509,769
590	SEMINOLE	1.40891%	4,931,173.57	4,931,174
600	SUMTER	0.30014%	1,050,485.00	1,050,485
610	SUWANNEE	0.28349%	992,216.46	992,216
620	TAYLOR	0.13734%	480,688.82	480,689
630	UNION	0.05577%	195,196.05	195,196
640	VOLUSIA	3.34148%	11,695,192.62	11,695,193
650	WAKULLA	0.09806%	343,205.86	343,206
660	WALTON	0.22575%	790,128.52	790,129
670	WASHINGTON	0.14291%	500,170.01	500,170
557	SCHOOL DEAF/BLIND	0.03032%	106,103.71	106,104
TOTAL		100.00000%	$ 350,000,000.00	$ 350,000,000