U.S. Department of Education

Washington, D.C. 20202-5335

APPLICATION FOR GRANTS UNDER THE

OIE Demonstration Grants

CFDA # 84.299A

PR/Award # S299A150045

Gramts.gov Tracking#: GRANT11950493

OMB No. , Expiration Date:

Closing Date: Jun 29, 2015

Table of Contents

This application was generated using the PDF functionality. The PDF functionality automatically numbers the pages in this application. Some pages/sections of this application may contain 2 sets of page numbers, one set created by the applicant and the other set created by e-Application's PDF functionality. Page numbers created by the e-Application PDF functionality will be preceded by the letter e (for example, e1, e2, e3, etc.).

Application for Federal Assistance SF-424

* 1. Type of Submission:	* 2. Type of Application:	* If Revision, select appropriate letter(s):
☐ Preapplication	☒ New	
☒ Application	☐ Continuation	* Other (Specify):
☐ Changed/Corrected Application	☐ Revision	

* 3. Date Received: 06/29/2015	4. Applicant Identifier:
5a. Federal Entity Identifier:	5b. Federal Award Identifier:

State Use Only:

6. Date Received by State:	7. State Application Identifier:

8. APPLICANT INFORMATION:

* a. Legal Name: TRIBAL EDUCATION DEPARTMENTS NATIONAL ASSEMBLY CO

* b. Employer/Taxpayer Identification Number (EIN/TIN): 20-0347239	* c. Organizational DUNS: 0678647620000

d. Address:

* Street1:	1506 Broadway
Street2:	
* City:	Boulder
County/Parish:	
* State:	CO: Colorado
Province:	
* Country:	USA: UNITED STATES
* Zip / Postal Code:	80308-1000

e. Organizational Unit:

Department Name: TEDNA	Division Name: TEDNA

f. Name and contact information of person to be contacted on matters involving this application:

Prefix:	* First Name: Quinton
Middle Name:	
* Last Name:	Roman Nose
Suffix:	

Title: Executive Director

Organizational Affiliation:

* Telephone Number: 580-791-1694	Fax Number:

* Email: qromannose@tedna.org

Application for Federal Assistance SF-424

*** 9. Type of Applicant 1: Select Applicant Type:**

K: Indian/Native American Tribally Designated Organization

Type of Applicant 2: Select Applicant Type:

Type of Applicant 3: Select Applicant Type:

* Other (specify):

*** 10. Name of Federal Agency:**

U.S. Department of Education

11. Catalog of Federal Domestic Assistance Number:

84.299

CFDA Title:

Indian Education -- Special Programs for Indian Children

*** 12. Funding Opportunity Number:**

ED-GRANTS-042815-001

* Title:

Office of Elementary and Secondary Education (OESE): Office of Indian Education (OIE): Indian Education Discretionary Grants Programs: Demonstration Grants for Indian Children Program CFDA Number 84.299A

13. Competition Identification Number:

Title:

14. Areas Affected by Project (Cities, Counties, States, etc.):

Add Attachment | Delete Attachment | View Attachment

*** 15. Descriptive Title of Applicant's Project:**

Tribal Education Department National Assembly (TEDNA) Native Youth Community Partners (NYCP) Project: College and Career Readiness for Indian Students

Attach supporting documents as specified in agency instructions.

Add Attachments | Delete Attachments | View Attachments

Application for Federal Assistance SF-424

16. Congressional Districts Of:

* a. Applicant: CO-002
* b. Program/Project: OK-003

Attach an additional list of Program/Project Congressional Districts if needed.

Congressional Districts_TEDNA_NYCP.pdf — Add Attachment | Delete Attachment | View Attachment

17. Proposed Project:

* a. Start Date: 10/01/2015
* b. End Date: 09/30/2019

18. Estimated Funding ($):

* a. Federal	2,264,458.00
* b. Applicant	0.00
* c. State	0.00
* d. Local	0.00
* e. Other	0.00
* f. Program Income	0.00
* g. TOTAL	2,264,458.00

*** 19. Is Application Subject to Review By State Under Executive Order 12372 Process?**

☐ a. This application was made available to the State under the Executive Order 12372 Process for review on ______.

☐ b. Program is subject to E.O. 12372 but has not been selected by the State for review.

☒ c. Program is not covered by E.O. 12372.

*** 20. Is the Applicant Delinquent On Any Federal Debt? (If "Yes," provide explanation in attachment.)**

☐ Yes ☒ No

If "Yes", provide explanation and attach

Add Attachment | Delete Attachment | View Attachment

21. *By signing this application, I certify (1) to the statements contained in the list of certifications and (2) that the statements herein are true, complete and accurate to the best of my knowledge. I also provide the required assurances** and agree to comply with any resulting terms if I accept an award. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. (U.S. Code, Title 218, Section 1001)**

☒ ** I AGREE

** The list of certifications and assurances, or an internet site where you may obtain this list, is contained in the announcement or agency specific instructions.

Authorized Representative:

Prefix: Mr.
* First Name: Quinton

Middle Name:

* Last Name: Roman Nose

Suffix:

* Title: Executive Director

* Telephone Number: 580-791-1694 Fax Number:

* Email: qrmannose@tedna.org

* Signature of Authorized Representative: Matthew Campbell
* Date Signed: 06/29/2015

Congressional Districts

TEDNA NYCP

Colorado
LEAD AGENCY- Congressional District - CO-002

Tribal Education Department National Assembly (TEDNA)
Quinton Roman Nose, Executive Director
Tribal Education Departments national Assembly
P.O. Box 18000
Boulder, CO 80308

Montana

Congressional District - MT-001
Rosebud County, MT
Northern Cheyenne Tribe
Northern Cheyenne Tribal School [BIE-Funded]

Oklahoma

Congressional District -OK-002
Okmulgee County, OK
Muscogee Creek Nation & Bristow Public School

FISCAL AGENT- Congressional District -OK-003
Canadian County, OK
Cheyenne and Arapaho, Darlington Public Schools, & El Reno Public School District

Congressional District -OK-004
Cleveland County, OK
Absentee Shawnee & Little Axe School District

ASSURANCES - NON-CONSTRUCTION PROGRAMS

NOTE: Certain of these assurances may not be applicable to your project or program. If you have questions, please contact the awarding agency. Further, certain Federal awarding agencies may require applicants to certify to additional assurances. If such is the case, you will be notified.

As the duly authorized representative of the applicant, I certify that the applicant:

1. Has the legal authority to apply for Federal assistance and the institutional, managerial and financial capability (including funds sufficient to pay the non-Federal share of project cost) to ensure proper planning, management and completion of the project described in this application.

2. Will give the awarding agency, the Comptroller General of the United States and, if appropriate, the State, through any authorized representative, access to and the right to examine all records, books, papers, or documents related to the award; and will establish a proper accounting system in accordance with generally accepted accounting standards or agency directives.

3. Will establish safeguards to prohibit employees from using their positions for a purpose that constitutes or presents the appearance of personal or organizational conflict of interest, or personal gain.

4. Will initiate and complete the work within the applicable time frame after receipt of approval of the awarding agency.

5. Will comply with the Intergovernmental Personnel Act of 1970 (42 U.S.C. §§4728-4763) relating to prescribed standards for merit systems for programs funded under one of the 19 statutes or regulations specified in Appendix A of OPM's Standards for a Merit System of Personnel Administration (5 C.F.R. 900, Subpart F).

6. Will comply with all Federal statutes relating to nondiscrimination. These include but are not limited to: (a) Title VI of the Civil Rights Act of 1964 (P.L. 88-352) which prohibits discrimination on the basis of race, color or national origin; (b) Title IX of the Education Amendments of 1972, as amended (20 U.S.C.§§1681-1683, and 1685-1686), which prohibits discrimination on the basis of sex; (c) Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. §794), which prohibits discrimination on the basis of handicaps; (d) the Age Discrimination Act of 1975, as amended (42 U. S.C. §§6101-6107), which prohibits discrimination on the basis of age; (e) the Drug Abuse Office and Treatment Act of 1972 (P.L. 92-255), as amended, relating to nondiscrimination on the basis of drug abuse; (f) the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment and Rehabilitation Act of 1970 (P.L. 91-616), as amended, relating to nondiscrimination on the basis of alcohol abuse or alcoholism; (g) §§523 and 527 of the Public Health Service Act of 1912 (42 U.S.C. §§290 dd-3 and 290 ee- 3), as amended, relating to confidentiality of alcohol and drug abuse patient records; (h) Title VIII of the Civil Rights Act of 1968 (42 U.S.C. §§3601 et seq.), as amended, relating to nondiscrimination in the sale, rental or financing of housing; (i) any other nondiscrimination provisions in the specific statute(s) under which application for Federal assistance is being made; and, (j) the requirements of any other nondiscrimination statute(s) which may apply to the application.

7. Will comply, or has already complied, with the requirements of Titles II and III of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646) which provide for fair and equitable treatment of persons displaced or whose property is acquired as a result of Federal or federally-assisted programs. These requirements apply to all interests in real property acquired for project purposes regardless of Federal participation in purchases.

8. Will comply, as applicable, with provisions of the Hatch Act (5 U.S.C. §§1501-1508 and 7324-7328) which limit the political activities of employees whose principal employment activities are funded in whole or in part with Federal funds.

9. Will comply, as applicable, with the provisions of the Davis-Bacon Act (40 U.S.C. §§276a to 276a-7), the Copeland Act (40 U.S.C. §276c and 18 U.S.C. §874), and the Contract Work Hours and Safety Standards Act (40 U.S.C. §§327-333), regarding labor standards for federally-assisted construction subagreements.

10. Will comply, if applicable, with flood insurance purchase requirements of Section 102(a) of the Flood Disaster Protection Act of 1973 (P.L. 93-234) which requires recipients in a special flood hazard area to participate in the program and to purchase flood insurance if the total cost of insurable construction and acquisition is $10,000 or more.

11. Will comply with environmental standards which may be prescribed pursuant to the following: (a) institution of environmental quality control measures under the National Environmental Policy Act of 1969 (P.L. 91-190) and Executive Order (EO) 11514; (b) notification of violating facilities pursuant to EO 11738; (c) protection of wetlands pursuant to EO 11990; (d) evaluation of flood hazards in floodplains in accordance with EO 11988; (e) assurance of project consistency with the approved State management program developed under the Coastal Zone Management Act of 1972 (16 U.S.C. §§1451 et seq.); (f) conformity of Federal actions to State (Clean Air) Implementation Plans under Section 176(c) of the Clean Air Act of 1955, as amended (42 U.S.C. §§7401 et seq.); (g) protection of underground sources of drinking water under the Safe Drinking Water Act of 1974, as amended (P.L. 93-523); and, (h) protection of endangered species under the Endangered Species Act of 1973, as amended (P.L. 93-205).

12. Will comply with the Wild and Scenic Rivers Act of 1968 (16 U.S.C. §§1271 et seq.) related to protecting components or potential components of the national wild and scenic rivers system.

13. Will assist the awarding agency in assuring compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. §470), EO 11593 (identification and protection of historic properties), and the Archaeological and Historic Preservation Act of 1974 (16 U.S.C. §§469a-1 et seq.).

14. Will comply with P.L. 93-348 regarding the protection of human subjects involved in research, development, and related activities supported by this award of assistance.

15. Will comply with the Laboratory Animal Welfare Act of 1966 (P.L. 89-544, as amended, 7 U.S.C. §§2131 et seq.) pertaining to the care, handling, and treatment of warm blooded animals held for research, teaching, or other activities supported by this award of assistance.

16. Will comply with the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. §§4801 et seq.) which prohibits the use of lead-based paint in construction or rehabilitation of residence structures.

17. Will cause to be performed the required financial and compliance audits in accordance with the Single Audit Act Amendments of 1996 and OMB Circular No. A-133, "Audits of States, Local Governments, and Non-Profit Organizations."

18. Will comply with all applicable requirements of all other Federal laws, executive orders, regulations, and policies governing this program.

19. Will comply with the requirements of Section 106(g) of the Trafficking Victims Protection Act (TVPA) of 2000, as amended (22 U.S.C. 7104) which prohibits grant award recipients or a sub-recipient from (1) Engaging in severe forms of trafficking in persons during the period of time that the award is in effect (2) Procuring a commercial sex act during the period of time that the award is in effect or (3) Using forced labor in the performance of the award or subawards under the award.

SIGNATURE OF AUTHORIZED CERTIFYING OFFICIAL	TITLE
Matthew Campbell	Executive Director
APPLICANT ORGANIZATION	DATE SUBMITTED
TRIBAL EDUCATION DEPARTMENTS NATIONAL ASSEMBLY CO	06/29/2015

Standard Form 424B (Rev. 7-97) Back

DISCLOSURE OF LOBBYING ACTIVITIES

Complete this form to disclose lobbying activities pursuant to 31 U.S.C.1352

Approved by OMB
0348-0046

1. * Type of Federal Action:
- [ ] a. contract
- [x] b. grant
- [ ] c. cooperative agreement
- [ ] d. loan
- [ ] e. loan guarantee
- [ ] f. loan insurance

2. * Status of Federal Action:
- [ ] a. bid/offer/application
- [x] b. initial award
- [ ] c. post-award

3. * Report Type:
- [x] a. initial filing
- [ ] b. material change

4. Name and Address of Reporting Entity:
- [x] Prime
- [ ] SubAwardee

* Name: TRIBAL EDUCATION DEPARTMENTS NATIONAL ASSEMBLY CO
* Street 1: 1506 Broadway
Street 2:
* City: Boulder
State: CO: Colorado
Zip: 80308
Congressional District, if known:

5. If Reporting Entity in No.4 is Subawardee, Enter Name and Address of Prime:

6. * Federal Department/Agency:
US Department of Education

7. * Federal Program Name/Description:
Indian Education -- Special Programs for Indian Children
CFDA Number, *if applicable:* 84.299

8. Federal Action Number, *if known:*

9. Award Amount, *if known:*
$

10. a. Name and Address of Lobbying Registrant:
Prefix:
* First Name: N/A
Middle Name:
* Last Name: N/A
Suffix:
* Street 1:
Street 2:
* City:
State:
Zip:

b. Individual Performing Services (including address if different from No. 10a)
Prefix:
* First Name: N/A
Middle Name:
* Last Name: N/A
Suffix:
* Street 1:
Street 2:
* City:
State:
Zip:

11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when the transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

*** Signature:** Matthew Campbell

***Name:**
Prefix: Mr.
* First Name: Quinton
Middle Name:
* Last Name: Roman Nose
Suffix:

Title: Executive Director
Telephone No.: 580-791-1694
Date: 06/29/2015

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Standard Form - LLL (Rev. 7-97)

OMB Number: 1894-0005
Expiration Date: 03/31/2017

NOTICE TO ALL APPLICANTS

The purpose of this enclosure is to inform you about a new provision in the Department of Education's General Education Provisions Act (GEPA) that applies to applicants for new grant awards under Department programs. This provision is Section 427 of GEPA, enacted as part of the Improving America's Schools Act of 1994 (Public Law (P.L.) 103-382).

To Whom Does This Provision Apply?

Section 427 of GEPA affects applicants for new grant awards under this program. **ALL APPLICANTS FOR NEW AWARDS MUST INCLUDE INFORMATION IN THEIR APPLICATIONS TO ADDRESS THIS NEW PROVISION IN ORDER TO RECEIVE FUNDING UNDER THIS PROGRAM.**

(If this program is a State-formula grant program, a State needs to provide this description only for projects or activities that it carries out with funds reserved for State-level uses. In addition, local school districts or other eligible applicants that apply to the State for funding need to provide this description in their applications to the State for funding. The State would be responsible for ensuring that the school district or other local entity has submitted a sufficient section 427 statement as described below.)

What Does This Provision Require?

Section 427 requires each applicant for funds (other than an individual person) to include in its application a description of the steps the applicant proposes to take to ensure equitable access to, and participation in, its Federally-assisted program for students, teachers, and other program beneficiaries with special needs. This provision allows applicants discretion in developing the required description. The statute highlights six types of barriers that can impede equitable access or participation: gender, race, national origin, color, disability, or age. Based on local circumstances, you should determine whether these or other barriers may prevent your students, teachers, etc. from such access or participation in, the Federally-funded project or activity. The description in your application of steps to be taken to overcome these barriers need not be lengthy; you may provide a clear and succinct description of how you plan to address those barriers that are applicable to your circumstances. In addition, the information may be provided in a single narrative, or, if appropriate, may be discussed in connection with related topics in the application.

Section 427 is not intended to duplicate the requirements of civil rights statutes, but rather to ensure that, in designing their projects, applicants for Federal funds address equity concerns that may affect the ability of certain potential beneficiaries to fully participate in the project and to achieve to high standards. Consistent with program requirements and its approved application, an applicant may use the Federal funds awarded to it to eliminate barriers it identifies.

What are Examples of How an Applicant Might Satisfy the Requirement of This Provision?

The following examples may help illustrate how an applicant may comply with Section 427.

(1) An applicant that proposes to carry out an adult literacy project serving, among others, adults with limited English proficiency, might describe in its application how it intends to distribute a brochure about the proposed project to such potential participants in their native language.

(2) An applicant that proposes to develop instructional materials for classroom use might describe how it will make the materials available on audio tape or in braille for students who are blind.

(3) An applicant that proposes to carry out a model science program for secondary students and is concerned that girls may be less likely than boys to enroll in the course, might indicate how it intends to conduct "outreach" efforts to girls, to encourage their enrollment.

(4) An applicant that proposes a project to increase school safety might describe the special efforts it will take to address concern of lesbian, gay, bisexual, and transgender students, and efforts to reach out to and involve the families of LGBT students.

We recognize that many applicants may already be implementing effective steps to ensure equity of access and participation in their grant programs, and we appreciate your cooperation in responding to the requirements of this provision.

Estimated Burden Statement for GEPA Requirements

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless such collection displays a valid OMB control number. Public reporting burden for this collection of information is estimated to average 1.5 hours per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. The obligation to respond to this collection is required to obtain or retain benefit (Public Law 103-382). Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the U.S. Department of Education, 400 Maryland Ave., SW, Washington, DC 20210-4537 or email ICDocketMgr@ed.gov and reference the OMB Control Number 1894-0005.

Optional - You may attach 1 file to this page.

GEPA_TEDNA_NYCP.pdf | Add Attachment | Delete Attachment | View Attachment

Tracking Number:GRANT11950493 Funding Opportunity Number:ED-GRANTS-042815-001 Received Date:Jun 29, 2015 02:16:43 PM EDT

General Education Provisions Act (GEPA)

The Tribal Education Department National Assembly (*TEDNA*) as the lead in this Native Youth Community Partners (NYCP) Project is committed to providing an environment free from harassment and other forms of discrimination based upon race, color, ethnic background, national origin, religion, creed, age, lack of American citizenship, disability, status of veteran of the Vietnam era, sexual orientation or preference, or gender, including sexual/gender harassment. Such an environment is a necessary part of a healthy learning and working atmosphere because such discrimination undermines the sense of human dignity and sense of belonging of all people in an environment.

POTENTIAL BARRIERS TO EQUITABLE PARTICIPATION

The target group for the proposed Project is Indian students, but an increasing percentage of students in each of the schools are low-income, special education, and/or English Language Learners. The primary barriers to the equitable and successful participation in the Project are English language proficiency and cultural differences. Many of our students' parents may have lower English proficiency levels than their children, and some low-income students' parents may have lower literacy skills.

STEPS PROPSOED TO ADDRESS THE BARRIERS

To ensure that all students and families are aware of the opportunities available through this project, view it as respectful and culturally sensitive, and understand its systems, strategies, procedures, and their responsibilities as participants, the Project's design will include the following features:

Language: Materials will be available in English and translated into other languages as the need arises. Most of the population is fluent in English, but the use of technology will also provide assistive and other accommodations to accessing material. If there are language barriers such as Indigenous language, American Sign, or other less common languages, TEDNA will make available translators.

Literacy: Program documents will be regularly reviewed to ensure ease of comprehension. Many Of the youth that we serve have learning disabilities and have had difficulty in school. Staff are well aware of these issues and make accommodations in individual sessions; supported by TEDNA's resources from participating and other tribal groups supporting special education. Written materials will be completed in English using an appropriate grade reading comprehension and are developed to be suitable for adolescents. Staff will read instructions aloud to ensure that literacy is not a participation requirement and will make other accommodations to meet individual youth or parent needs.

CERTIFICATION REGARDING LOBBYING

Certification for Contracts, Grants, Loans, and Cooperative Agreements

The undersigned certifies, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure of Lobbying Activities," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

Statement for Loan Guarantees and Loan Insurance

The undersigned states, to the best of his or her knowledge and belief, that:

If any funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this commitment providing for the United States to insure or guarantee a loan, the undersigned shall complete and submit Standard Form-LLL, "Disclosure of Lobbying Activities," in accordance with its instructions. Submission of this statement is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required statement shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

* APPLICANT'S ORGANIZATION

TRIBAL EDUCATION DEPARTMENTS NATIONAL ASSEMBLY CO

* PRINTED NAME AND TITLE OF AUTHORIZED REPRESENTATIVE

Prefix: Mr. * First Name: Quinton Middle Name:

* Last Name: Roman Nose Suffix:

* Title: Executive Director

* SIGNATURE: Matthew Campbell * DATE: 06/29/2015

Abstract

The abstract narrative must not exceed one page and should use language that will be understood by a range of audiences. For all projects, include the project title (if applicable), goals, expected outcomes and contributions for research, policy, practice, etc. Include population to be served, as appropriate. For research applications, also include the following:

- Theoretical and conceptual background of the study (i.e., prior research that this investigation builds upon and that provides a compelling rationale for this study)
- Research issues, hypotheses and questions being addressed
- Study design including a brief description of the sample including sample size, methods, principals dependent, independent, and control variables, and the approach to data analysis.

[Note: For a non-electronic submission, include the name and address of your organization and the name, phone number and e-mail address of the contact person for this project.]

You may now Close the Form

You have attached 1 file to this page, no more files may be added. To add a different file, you must first delete the existing file.

* Attachment: PROJECT_ABSTRACT_TEDNA_NYCP.pdf | Add Attachment | Delete Attachment | View Attachment

Project Abstract

TEDNA NYCP Project: College and Career Readiness for Indian Students

The purpose of the Tribal Education Department National Assembly (*TEDNA*) Native Youth Community Partners (*NYCP*) *Project* (hereafter referred to as the *TEDNA NYCP Project*) is to develop, test, and demonstrate effectiveness of College and Career Readiness services and supports to improve the educational opportunities and achievement of Indian students in middle and junior high school. The *TEDNA NYCP Project* is expected to achieve the goal that all participating Grade 6-9 Indian students (n=1120) will improve College and Career Readiness as defined by a successful transition into high school with a GPA of 2.0+ and a plan that addresses and supports College and Career Readiness that is locally informed.

The *TEDNA NYCP Project* partners ACT, Native American Rights Fund, Academic Development Institute, Read Right, and Tuwaduq Cultural & Research Institute will be working in a collaborative partnership through the Tribal Education Department National Assembly (TEDNA). TEDNA is a national non-profit membership organization for the Education Departments of American Indian and Alaska Native Tribes. Local partners in this project will include four Indian tribes/nation that are each TEDNA members, five local educational authorities (LEAs), a tribal school, and which are locally situated in two states: **Montana** (Northern Cheyenne Tribe & Northern Cheyenne Tribal School); **Oklahoma** (Absentee Shawnee Tribe & Little Axe School District, Muscogee Creek Nation & Bristow Public Schools, and Cheyenne and Arapaho Tribe with Darlington Schools & El Reno Public School District).

By 2018, two-thirds of all available jobs will require some sort of postsecondary education to ensure career success. A college-ready person is able to enter postsecondary education without the need for remedial coursework and a career-ready person effectively navigates pathways that connect education and employment to secure a desired career. Barriers cited by current research and needs assessments reveal common barriers to Indian student academic achievement and career aspirations that include adverse socioeconomic factors, limited access to high quality teachers and/or instruction, and low levels of family and community involvement. These factors are exacerbated by high risk factors, poor physical school conditions, geographic isolation, low high school graduation rates, and lack of dedicated support services that cultivate a climate and culture of College and Career Readiness. The *TEDNA NYCP Project* embraces the opportunity of benefiting from a successful plan of action already in progress through the Oklahoma State Regents for Higher Education-ACT partnership and TEDNA's longstanding advocacy of Tribal Education Department's exercising self-determination through Tribal Education Codes, assessing needs, and building capacity to improve student outcomes aligned with tribal values and traditions.

The *TEDNA NYCP Project* will use community-based strategies that improve high school success among Indian students by measuring behaviors and psychosocial attributes early in their academic experience that are often overlooked in standardized tests, but critical components of their academic success. The benefit of our longitudinal cohort model will inform implementation of strategies by using assessment data and understanding of academic readiness to project potential learner performance that gives parents, staff, and educators a superior advantage in crafting truly meaningful supports for Indian students. Measureable objectives of the project are: (a) to increase the academic *Achievement* of participating Indian students in Grades 6-9 to be College and Career Ready; (b) to increase informed College and Career *Planning* with Indian students in Grades 6-9; and (c) to build a College and Career Readiness *Culture* so that everyone, especially educators, community, students, and families ALL believe that Indian students are capable of success in College and Career.

Project Narrative File(s)

*** Mandatory Project Narrative File Filename:** PROJECT_NARRATIVE_TEDNA_NYCP.pdf

Add Mandatory Project Narrative File | Delete Mandatory Project Narrative File | View Mandatory Project Narrative File

To add more Project Narrative File attachments, please use the attachment buttons below.

Add Optional Project Narrative File | Delete Optional Project Narrative File | View Optional Project Narrative File

Tracking Number:GRANT11950493 Funding Opportunity Number:ED-GRANTS-042815-001 Received Date:Jun 29, 2015 02:16:43 PM EDT

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PROJECT NARRATIVE

NEED FOR PROJECT

Informed by Evidence. The need for the Tribal Education Department National Assembly (*TEDNA*) Native Youth Community Partners (*NYCP*) *Project* (hereafter referred to as the *TEDNA NYCP Project*) is informed by recent evidence, as well as national and local tribal needs assessments. As shared in *The State of Native Education 2012* by the then President Quinton Roman Nose of the National Indian Education Association, Indian students are the lowest performing students in any category. The national high school dropout rate is 50%, and is much higher in many states. They have the highest expulsion, absenteeism, and suspension rates of any student group. Tribal 8th grade students are 18% more likely to read or perform in mathematics at a below basic level than their Caucasian peers. Tribal communities find these statistics unacceptable, and they perceive this as a system that fails their children – not vice versa (Roman Nose, 2015).

ACT is an active partner in this *TEDNA NYCP Project.* ACT has shared nation and state data supporting that there is a need to increase College and Career Readiness among Indian students. This need is supported by the ACT College Readiness Benchmarks. These College and Career Readiness ACT benchmarks were derived from subject area test data and they represent the level of achievement required for students to have a 50% chance of obtaining a "B" or higher and predicted to have about a 75% chance of obtaining a C or higher in corresponding credit-bearing first year college courses. Based on a nationally stratified sample, the ACT Benchmarks are median course placement values for these institutions and represent a typical set of expectations. ACT College Readiness Benchmarks were revised for the 2013 graduating class reporting. The ACT is scored on a 1 - 36 scale. ACT conducted a personalized look at the Indian student's academic performance regarding Indian students in the two states in this proposal. For each of the subject areas you can see in Table 1 the percentages over time of those youth meeting college and career readiness benchmarks.

Table 1: Percentage (%) of Indian Students Meeting ACT College Readiness Benchmarks by Subject Area in 2012, 2013 and 2014.

	Montana			**Oklahoma**		
Subject Area	**2012**	**2013**	**2014**	**2012**	**2013**	**2014**
English	33.2%	23.4%	18.6%	56.1%	56.3%	55.0%
Mathematics	2.5%	13.5%	6.1%	24.1%	22.3%	23.6%
Reading	31.8%	19.0%	11.1%	44.0%	36.5%	35.8%
Science	7.9%	7.7%	5.7%	17.0%	23.1%	24.0%

All of these data indicate that readiness for and even access to post-secondary education is significantly lacking for Indian students in our target sites. The situation is intensified by the lack of family support and engagement at these sites specifically targeted toward academic achievement and post-secondary goals. This is attributed primarily to low rates of parental education and little family understanding of the college-going process. Members of the *TEDNA NYCP Project* believe that academic readiness is just one of several factors that contribute to College and Career Readiness, with other factors including academic behaviors of students and informed career planning (e.g., based on interests). Together, these elements define a clear picture of Indian student readiness for college and career readiness. Research and studies have also shown that the earlier children learn that they can go to college, the better prepared they are to pursue college & career opportunities (Symonds et. al., 2011). Grade 6 students will enter the *TEDNA NYCP Project* schools and will remain in the program through Grade 9 to support the transition to high school.

Barriers to Indian Student College and Career Readiness. *TEDNA NYCP Project* partner Tribal Education Departments (TEDs) have provided added insights into the barriers to college and career readiness in guiding this the development of this proposal to address the needs of Indian students in Grades 6-9.

Northern Cheyenne Tribal Education Department endeavors to improve Indian student academic performance in middle and junior high school by identifying and reframing "out-of-school" barriers so as to provide: (a) appropriate homework environments, (b) access to computer and technology for learning, and (c) opportunities for active learning. They also want to increase youth interaction with positive adult role models from the community and offer meaningful local employment during and after completing school on their journey to become college and career ready.

Absentee Shawnee Tribe shared that health and wellbeing of tribal youth in middle school and junior high is of utmost concern, and many of their Indian students are at risk of or are suffering from substance abuse, behavioral disorders, depression, fetal alcohol syndrome, ADHD, and/or alcohol or illicit drug use. The Tribe sees their partnership in this *TEDNA NYCP Project* as an essential start to alleviate the insidious influence of these barriers that conspire to undermine the individual motivation, family supports, and school climate necessary to achieve Indian student college and career readiness.

Muscogee (Creek) Nation shared that there are many barriers preventing students from experiencing academic success. Poverty, lack of family support, and cultural insensitivity are prominent. The cultural differences the middle school student experience between the tribal community and the educational setting of public schools is not always conducive and supportive to their learning. Indian students perform two to three grade levels below their non-Indian peers in reading and mathematics. The Nation envisions that the *TEDNA NYCP Project* will foster an ongoing relationship with their students to provide college and career supports before they transition to high school.

Cheyenne and Arapaho Tribe shared that Indian students are both passively disengaged from classroom activities and actively disengaged through various kinds of misbehaviors at school and in the community even before 6th grade. Such misbehaviors put students at higher risk and range on a continuum from classroom discipline problems to delinquency and criminal behaviors. Tribal representatives feel that this *TEDNA NYCP Project* needs to help them with engaging and preparing youth to be college and career ready early in their educational experience.

The Tribal Education Department National Assembly (TEDNA) while preparing this proposal, sought out and conducted a tribal needs assessment that revealed common barriers to Indian student academic achievement and career aspirations. These common factors include adverse socioeconomic factors, limited access to high quality teachers and instruction, and low levels of family and community involvement. These factors are exacerbated by high risk factors, poor physical school conditions, and lack of dedicated support services that cultivate a climate and culture of college and career readiness within the school and tribal community. The lack of dedicated college and career readiness services and staff is of primary interest to be addressed in this *TEDNA NYCP Project*.

Opportunities and Existing Efforts to Support Indian Students. The *TEDNA NYCP Project* builds on tribal opportunities and existing efforts by providing some valuable tools, professional development, and staff to impact the college and career readiness culture.

Northern Cheyenne's Tribal Education's vision is to assure that students have access to acquiring a quality education to assure they graduate from the school systems and postsecondary institutions. This is supported by the Higher Education Scholarship and Job Training Programs to enhance student success in college and a chosen career. The Johnson O'Malley program provides supplemental education services to Indian students in the public school systems to improve: attendance, reading and math scores; parent involvement, cultural programs, student training and leadership in the schools; and student access to educational materials.

Absentee Shawnee address the mental health needs of students through prevention and intervention services for substance abuse and anger management counseling in school, after school, and in homes. Tribal staff network with leaders in the community, Indian Child Welfare, and tribal social services to stay in touch with the needs of at-risk youth and teach them how to set goals, maintain good grades, and stay in school. Staff discuss with Indian students addiction, the stages of alcoholism, and steps to take to stop the destructive cycle. The Tribe also has experience operating a summer leadership camp that provides life skills, and the Youth Council sponsors a New Year's Eve dance, promoting it with flyers advising their youth to remain drug free and gang free, to maintain abstinence, stay in school, and plan for college.

Muscogee Creek Nation demonstrates a commitment to education through legislation and an active Department of Education and Training. In 2015-16, the National Council passed legislation to purchase usage rights for myOn web-based Literacy Program for $1.4 million. This allows free access to the myOn Literacy Program for all Muscogee (Creek) citizens, free myOn training to all Johnson O'Malley (JOM) school resource staff and free access to all public schools within their territory. Through a partnership with MetaMetrics, myON provides actionable data on: number and type of books opened and read; time spent reading; completion of book quizzes; results of regular benchmark assessments; and a report that forecasts long-term reading growth. The myOn Literacy program provides available books on the myOn web-based site that includes beginner reader level through high school literary classics and 50+ books that are translated into the Native Mvskoke Language.

Cheyenne and Arapaho Tribe's Department of Education provides assistance, support and encouragement to tribal members at any stage of their schooling who wish to increase and improve their educational level. By providing services like higher education, Johnson O'Malley, Tribal Youth Programming, and culture & heritage that these service will motivate, engage, and prepare the tribal member for gainful employment resulting in a self-motivated life for both themselves and their families.

The *TEDNA NYCP Project* will continue to embrace and recognize these local opportunities and existing supports. Guiding this *TEDNA NYCP Project* is also TEDNA's longstanding advocacy of Tribal Education Departments exercising self-determination through Tribal Education Codes, assessing educational and career needs, and building capacity to improve outcomes for Indian students consistent with tribal values and traditions. All stakeholders agree that this proposal will provide needed programs and activities to address gaps and weaknesses in Indian students and culture of community to enhance and support College and Career Readiness.

QUALITY OF PROJECT DESIGN

Defined Local Geographic Area. The *TEDNA NYCP Project* partners ACT, NARF, ADI, Read Right, and Tuwaduq Cultural & Research Institute will be working in a collaborative consortium through the Tribal Education Department National Assembly (TEDNA). TEDNA is a non-profit membership organization for the Education Departments of American Indian and Alaska Native Tribes. The founding of TEDNA has been supported by the Native American Rights Fund and the U.S. Department of Education's Office of Indian Education. Consortium partners include four Indian tribes/nation that are each TEDNA members, five local educational authorities (LEAs) that include eligible RLIS & SRSA districts, a Bureau of Indian Education funded school, and which are locally situated in two states: **Montana** (Northern Cheyenne Tribe & Northern Cheyenne Tribal School [BIE-Funded]); **Oklahoma** (Absentee Shawnee Tribe & Little Axe School [RLIS]

District, Muscogee Creek Nation & Bristow Public Schools, and Cheyenne and Arapaho Tribe with Darlington Schools [RLIS &SRSA] & El Reno Public School District). Northern Cheyenne Tribe was also a recipient of the 2010 Promise Neighborhoods grant from the United States Department of Education.

The *TEDNA NYCP Project* will be using a cohort model starting with Grade 6 Indian students. Year 1 will serve 138 Grade 6 students: Year 2 will serve 407 Grade 6-7 students, Year 3 will serve 807 Grade 6-8 students, and then Year 4 will serve 1120 Grade 6-9 students. Professional development will occur predominately in the first two years, will additional training and supports coming in the following years to address interventions and supports.

Research-Based and Proven Practices. ACT (2008) in the research report called *The Forgotten Middle: Ensuring that All Students are on Target for College and Career Readiness before High School* shared that more than 80% of eighth-graders are not on track to be ready for college-level work by the time they graduate from high school. The report also stated that, "The process of preparing students to make successful transitions from middle school to high school is just as important as the process of preparing them to make successful transitions from high school to postsecondary education" (p. 40).

ACT Engage. ACT Engage is the academic behavior component of ACT's College and Career Readiness System. By measuring motivation, social engagement and self-regulation, ACT Engage assessments will help *TEDNA NYCP Project* partners evaluate Indian students' self-reported psychosocial attributes, determine their levels of risk, and identify interventions to help them succeed academically. ACT has tested over 14,000 students at 48 postsecondary institutions using ENGAGE College and tracked these students through their college careers (ACT, 2015a, b).

Based on this and other research, ACT has examined the extent to which the individual Engage Grades 6-9 scale scores and behavioral information items/scales differentiate students who failed one or more courses from those who did not, by calculating the differences between Engage Grades 6-9 and behavioral information scores of students who passed all of their courses (i.e., had zero course failures), those who failed one class, and those who failed two or more classes (each expressed as an effect size). ACT found that Engage Grades 6-9 and behavioral information had moderate effect sizes for differentiating students who failed one class (range of $d = .09$ to $.79$, median = .34) and strong effect sizes for differentiating students who failed two or more classes (range of $d = .30$ to 1.28, median = .57{Equivalent to 7 months of school growth}. This provides evidence of the utility of Engage Grades 6-9 for identifying students who may be at risk of failing classes and thus more likely to drop out of school.

<u>ACT Aspire</u>. The ACT Aspire assessment system is a curriculum- and standards-based college and career readiness tool that was designed with the end users in mind, and is fully aligned to the ACT college entrance examination including the four content areas of Reading, English, Mathematics, and Science. Designed for easy interpretation by students, parents, and educators, ACT Aspire measures student progress toward college and career readiness as defined by ACT's pioneering research, data, standards, and benchmarks. ACT Aspire is designed not only to measure the skills and knowledge needed for college and career success that students have acquired at the early high school level, but the degree to which they are progressing to develop these skills in earlier grades as well. ACT Aspire is the only assessment system that can provide data to track student progress toward college and career readiness in this project from Grade 6 to early high school. To achieve this, ACT has developed two sets of Readiness Benchmarks:

- ACT College Readiness Benchmarks
- ACT Readiness Benchmarks

ACT College Readiness Benchmarks are empirically designed achievement targets affiliated with (or derived from) The ACT test that are indicative of student success in actual introductory-level, credit-bearing, first-year college courses. Meeting an ACT College Readiness benchmark score in a particular subject area indicates that the student has a reasonable chance for success (defined as a 75% chance of receiving a grade of 'C' or a 50% chance of receiving a grade of 'B') in the corresponding first-year college course.

ACT Readiness Benchmarks were derived from the ACT College Readiness Benchmarks. These Benchmarks are designed to indicate progress TOWARD college readiness by the time a student takes The ACT test. With Benchmarks established for each subject (English, Mathematics, Reading, Science, and Writing) at each grade from Grade 6 to the Early High School assessment, The ACT Readiness Benchmarks enable educators, parents, and students to monitor progress toward the skills and knowledge needed for success throughout a student's academic career. ACT Aspire is the only assessment system spanning the grades that has such direct empirical evidence for benchmarks at each grade across a nationally representative population.

Read Right – (Reading). For many Indian students in Grade 6-9 reading problems constitute a major barrier to academic success. This project will address this barrier by providing a reading approach through a program called Read Right. The focus will be five competencies: phonemic awareness, phonics (including decoding, word attack, and sight word recognition) fluency, vocabulary, and comprehension. Read Right is science-based intervention program that independent research has recognized as a "highly effective" practice that can produce significant positive effects after only one semester of tutoring. Read Right has been shown to increase a student's reading ability by a full grade level in 13 to 20 hours of tutoring. In 2004, the Kalispel Tribe, used the Read Right program and 80% of the students gained two or more grade levels in reading and 24% gained four or more grade levels. An Education Northwest study showing the effectiveness of Read Right was reviewed by the Technical Committee of the Center for Response to Intervention and given high marks for rigor and quality. The National Dropout Prevention Center/Network awarded Read Right its highest rating (strong evidence of effectiveness) and has listed it on its website.

<u>Khan Academy (Math)</u>. SRI (Murphy et. al., 2014) in their in their *Research on the Use of Khan Academy in Schools* report noted that they found that "In exploratory analyses we examined how the time spent on Khan Academy and the number of problem sets completed to proficiency were associated with better than predicted spring test scores and attitudinal measures"(p. xi). They also "... found a positive and statistically significant relationship between use of Khan Academy (the minutes spent working with the Khan Academy resources and the number of problem sets successfully completed to proficiency) and improved student outcomes—better than predicted test scores, lower math anxiety and higher confidence in one's ability to do math" (p. xi).

Khan Academy is a non-profit educational website created in 2006 by educator Salman Khan, a graduate of MIT and Harvard Business School. The mission is to provide "a free world-class education for anyone anywhere." All of the site's resources are available for free to anyone. The Khan Academy offers Grade K-12 and beyond math practice exercises, instructional videos, and a personalized learning dashboard that empowers learners to study at their own pace in and outside of the classroom. For each student when they enter the site that enter into what could be called math missions. These math missions guide learners from kindergarten to calculus using state-of-the-art, adaptive technology that identifies strengths and learning gaps. To engage and motivate the student in learning math they have included an array of math supporting insights and materials from institutions like NASA, The Museum of Modern Art, The California Academy of Sciences, and MIT to offer specialized content. Our *TEDNA NYCP Project* staff will provide support for this online math resource and other open educational resources to personalize math interventions for Indian students based on assessment information.

Personal Competencies. In essence, personal competencies underlie all learning and, as described by Redding (2014) are an ever-evolving accumulation of related capabilities that facilitate learning and other forms of goal attainment. "Personalization refers to a teacher's relationships with students and their families and the use of multiple instructional modes to scaffold each student's learning and enhance the student's personal competencies. Personalized learning varies the time, place, and pace of learning for each student, enlists the student in the creation of learning pathways, and utilizes technology to manage and document the learning process and access rich sources of information" (p. 3).

Personal competencies are integral to learning and acquired through learning and applied in the learning process. Personalized learning often amplifies the importance of personal competencies. "Underlying the optimism about personalized learning is the belief that a student's desire to learn and effectiveness in learning are enhanced when the learning is personalized" (Ibid., p. 4). As students and adults are given greater choice and control over learning, their more prominent role in the entire learning process only magnifies the importance of personal competencies, and how others may enhance and support them. The Academic Development Institute (ADI) in cooperation with its technical assistance center of Center on Innovations in Learning will provide professional development to *TEDNA NYCP Project* participants to use a framework for personal competencies by differentiating between three fundamental terms: mastery, competence, and competency. To achieve a competence, or a sufficient degree of mastery in any given area, four specific competencies must be leveraged. These four competencies are: social/emotional competency, motivational competency, metacognitive competency, and cognitive competency.

ACT Profile. ACT Profile is a career and college planning platform designed to provide valuable, personalized insights to help students discover and explore personally relevant career and educational options. It essentially combines online career interest, abilities, and values inventories, as well as innovative tools to explore an extensive database of information on occupations, college majors, and postsecondary institutions. Students, counselors, educators and parents can connect within this online community to assist with career and educational planning. ACT Profile is designed to help students navigate some of the most critical tasks needed for future work satisfaction and success. The career inventories promote work-relevant self-knowledge and provide a focus for educational and career exploration. ACT Profile provides extensive information on college majors, colleges, and occupations, including multiple filters that students can use to personalize and target their exploration experience. The exploration of personally relevant educational and career options, in turn, promotes discovery of good-fit choices and career decidedness. Research indicates that students who set career goals are more likely to engage in meaningful planning around those goals.

Measureable Goal, Objectives, and Outcomes.

The TEDNA NYCP Project **Goal** is to increase College and Career Readiness for Grade 6-9 participating Indian students through improved academic readiness, informed career planning (e.g., based on interests), and building the capacity of the Tribal Education Departments to maintain this College and Career Readiness culture.

Measure: Indian students will improve College and Career Readiness as defined by a successful transition into high school with a GPA of 2.0+ and a plan that addresses College and Career Readiness that are locally informed.

The TEDNA NYCP Project **Objectives** are based on the identified needs, opportunities, barriers, and scientifically based research of the partners to increase College and Career Readiness. The following are the objectives supportive to achievement of the goal:

A. To increase the academic *Achievement* of participating Indian students in Grades 6-9 to be College and Career Ready.

B. To increase informed College and Career *Planning* with Indian students in Grades 6-9.

C. To build a College and Career Readiness *Culture* so that everyone, especially educators, community, students, and families ALL believe that Indian students are capable of success in College and Career.

The TEDNA NYCP Project **Outcomes** will develop the infrastructure to support a College and Career Ready culture over time, and provides support for students both at school and at home, building on resources that already have been successful in showing positive outcomes for the Indian students. The *TEDNA NYCP Project* will attain the following:

- ✓ State scores for Indian students who participate will increase by 10% annually.
- ✓ ACT Aspire scores for Indian students who participate will increase by 10% annually.
- ✓ ACT Engage predictions of Indian students participating to graduate high school and who will earn at least a 2.0 GPA in high school will increase by 10% annually.
- ✓ 80% of Indian students participating will have ACT Aspire, Engage, & Profile informed plans.
- ✓ 80% of Indian students will create an account with the ACT Profile system.
- ✓ 90% of Indian students will report increased knowledge of how to finance college.
- ✓ 75% of partner families will report increased knowledge of: Benefits of attending college, how to support students in choosing an appropriate college, and how to apply to college.
- ✓ 90% of partner staff will complete Personal Competency professional development.
- ✓ 90% of partners will participate in Tribal Education Code professional development

Design Successful To Address College & Career Readiness

The *TEDNA NYCP Project* Design is adapted from the Institute of Education Sciences (IES) Practice Guide, *Helping Students Navigate the Path to College*). This guide was designed to help districts develop practices to increase access to higher education and it describes how to implement five recommendations that can help students prepare for and transition to college, and indicates the research evidence demonstrating the effectiveness of each recommended practice. The next Table shows how the Practice guide mirrors the *TEDNA NYCP Project* objectives.

<table>
<tr><th>IES Practice Guide Recommendations</th><th>TEDNA NYCP Project Design</th></tr>
<tr><td>1. Offer courses and curricula that prepare students for college-level work, and ensure that students understand what constitutes a college-ready curriculum by 9th grade.</td><td rowspan="2"><u>Increase Academic Achievement</u> – Indian Students will acquire information needed to be successful as a middle, high school, and postsecondary student and career professional. These skills include research-based indicators for College & Career Readiness: goal setting, persistence, motivation, help seeking and time management, test taking skills, collaborative learning, and math & reading supports,.</td></tr>
<tr><td>2. Utilize assessment measures throughout high school so that students are aware of how prepared they are for college, and assist them in overcoming deficiencies as they are identified.</td></tr>
<tr><td>3. Engage and assist students in completing critical steps for college entry.</td><td rowspan="2"><u>Increase College and Career Planning</u> – Empower Indian students and families with family-focused planning, supports, and financial aid knowledge through advising, academic planning, career counseling, and tribe workshops.</td></tr>
<tr><td>4. Increase families’ financial awareness, and help students apply for financial aid.</td></tr>
<tr><td>5. Surround students with adults and peers who build and support their college-going aspirations.</td><td><u>Build a College and Career Readiness Culture</u> - Tribal Education Department leadership in the context of education policy, practices, procedures, community, and processes will support College and Career Readiness through strategies and collaboration informed by cultural relevancy.</td></tr>
</table>

Logic Model Supported by Strong Theory

***TEDNA NYCP Project*: College and Career Readiness for Grade 6-9 Indian Students**

INPUTS	ACTIVITIES	OUTPUTS	OUTCOMES	IMPACT
Indian **student** has a voice and is an informed active participant to **Increase Academic Achievement**	Academic & Non-cognitive measures	Reading Scores increase Math Scores increase	Increase academic advisement of Indian students in Grades 6-9 for college and career readiness. Improve postsecondary college and career planning with Indian students.	College & Career Readiness
	Planning tools	Algebra 1 completions increase		
	Course taking/planning	Increase coursework knowledge		
	Tutoring/Advising Read/Right Kahn Academy MyOn Reading	Financing college choices ACT Profile accounts		
Tribal staff **Increase support for College and Career Planning**	Measures inform Personal Competencies	Tribal Education Code	Increase Tribal Education Department capacity to institute Tribal Education Codes pertaining to college and career readiness.	
	Personalized Learning Mentors/Tutors	Professional Competencies		
	Learning Community	Operational Education Code		
Tribal Education Departments **Build a College and Career Readiness *Culture***.	Communication	College readiness increases	Improve college and career readiness culture so that everyone, especially educators, community, students, and families ALL believe that Indian students are capable of success in postsecondary options.	
	Family empowerment	Aspirations increase		
	Community Awareness & Collaboration	Coursework cultural relevancy		
	Tribal Education Code	Families financially aware		

Assumptions	Considerations
The ACT exams (ASPIRE & ENGAGE) are a valid measure of College & Career Readiness All students are capable of mastering college & career readiness standards Tribal Education Departments want to support college and career readiness	Limited financial resources Tribal access to staff Tribes structure limits flexibility and time Community and family dynamics

Collaboration of Partners. The *TEDNA NYCP Project* has gathered national leaders in research and evidence-based programming and services to support this proposal. These are not add-on partners, but as you have seen already in this proposal, including the MOUs, these folks are integral to the guidance of this project. Our consortium partners in this *TEDNA NYCP project* define a college-ready Indian student as able to enter postsecondary education without the need for remedial coursework. A career-ready Indian student is one who effectively navigates pathways that connect education and employment to secure a desired career. Our *TEDNA NYCP Project* is expected to achieve the goal that all Grade 6-9 Indian students will improve college and career readiness as defined by a successful transition into high school with a GPA of 2.0+ and a plan that addresses College and Career Readiness that are locally informed.

TEDNA's mission is uniquely suited to help this project be successful, replicable, and sustainable: To assemble and represent collectively indigenous sovereign nations' departments of education; Respect and honor each nation's distinct spiritual, cultural, linguistic, and economic identities; foster effective relationships with other governmental and educational agencies, organizations, and entities; facilitate communication and cultivate consensus amongst members by, among other things, providing current, accurate, and pertinent information to members; and support and encourage each member nation's right to define and reach its own education goals for its students, families, and communities wherever they may be located. The *TEDNA NYCP Project* includes partnerships between four tribes, five local education authorities, four non-profits, and one private company working across two states. Key local level stakeholders will include: tribal education leaders, school and district administrators, program coordinators (e.g., an educator with familiarity with Indian education), Indian youth supporting staff, math and reading teachers, families and parents, and Grades 6-9 Indian students.

QUALITY OF PROJECT PERSONNEL

The *TEDNA NYCP* **Executive Director** will be Quinton Roman Nose (Cheyenne), Executive Director of TEDNA. Quinton has 16 years of Title VII Indian Education experience and served six years as his tribes' Tribal Education Department Executive Director. He is a firm believer in tribal sovereignty in education and tribes putting education as a high priority. Quinton worked with other Oklahoma Indian educators to successfully lobby the state government to establish the Oklahoma Indian Education Advisory Council. He completed two terms on the Board of Directors for the National Indian Education Association serving as President during the 2011-12 year.

The *TEDNA NYCP* **Project Director** will have the primary purpose is to ensure the continued viability and presence of the TEDNA NYCP by complying with and abiding by all federally mandated requirements of the program. These also includes the assurance of collected data by the evaluator of the GPRA performance measures. Grant compliance and meeting stipulated goals, objectives and outcomes, is a primary function of this position. Equally important is maintaining the partnership between the tribal education departments, local education authorities, families, contractors, and communities served.

The *TEDNA NYCP* **Support Staff** will perform administrative duties for the Project Director and executive management. Responsibilities will include screening calls; managing calendars; making travel, meeting and event arrangements; preparing reports and financial data; training and supervising other support staff; and customer relations. Position will requires strong computer and Internet research skills, flexibility, excellent interpersonal skills, project coordination experience, and the ability to work well with all levels of internal management and staff, as well as outside clients and vendors. Sensitivity to confidential matters will be required.

The *TEDNA NYCP* **Education Specialists(4)** are to be located locally at each of the tribal sites. The day-to-day operations project at each tribal site will be coordinated by the Education Specialist, with the minimal requirement of a BA/BS degree, have experience working with students in educational settings, and possess a valid driver's license. They must have excellent knowledge of college admissions and scholarship requirements, high school graduation requirements, academic standards, excellent oral and written communication skills, and experience working with diverse populations. Experience working in an Indian education programs is preferred. They will work with teachers, counselors, and administrators at the school sites and all community partners to fully plan, implement and assist with the evaluation of all of the site-based programs described in this proposal.

The *TEDNA NYCP* **Project Key Tribal Personnel** at the four participating tribal sites are qualified and experienced Native educators with program administration and implementation experience. Their current and past projects include working with local schools (LEAs) throughout the implementation of past projects and programs.

Norma Bixby (Northern Cheyenne) at the Northern Cheyenne Tribe, has served as the Director of Northern Cheyenne Tribal Education for 25 years, and manages and operates Northern Cheyenne Public Law 638 Contracts for Higher Education, Johnson O'Malley, and Job Training and Placement. She is responsible for complying with all federal regulations governing the contracts. The programs provide scholarships for Higher Education and Job Training and Placement. Norma acts as a liaison between the Northern Cheyenne Tribe and the education systems on or near the reservation to assure that the educational needs of the Tribe are addressed at the local, state and national level.

Tresha Spoon (Absentee Shawnee) is the Director of Education for the Absentee Shawnee Tribe and has expertise in planning, budgeting, developing and managing programs, and event coordination. She has coordinated a wide range of programs and events for children and youth ranging from pre-K to high school. Tresha administers the Tribe's education programs which consist of: Academic (K-12), Job Training Adult Education, and Higher Education, as well as currently serves as a parent representative on the Indian Education Title VII Parent Committee for Tecumseh Public Schools.

Dr. Wayne Johnson (Muscogee), the Secretary of Education and Training at the Muscogee (Creek) Nation, has 42 years of education and administrative experience. His educational career includes working at Rosebud and Pine Ridge BIE schools. He has been the Secretary of Education for the Muscogee Nation for three years, and has administered federal grants for his entire 42 years of educational experience. Tonya Scott (Muscogee), has 18 years of high school science teaching experience, and has a Master's Degree in Educational Leaderships, a BA in Secondary Science Education, and a BA in Entomology, and holds an Oklahoma K-12 administrative certificate.

James Bates Jr. (Arapaho) is the Resource Specialist with the Cheyenne and Arapaho Tribes Department of Education. Prior to his current position as the Resource Specialist he was an adviser, teacher, and coach in Shawnee, El Reno and Norman public schools. Mr. Bates played college basketball and in semi-pro fast pitch softball he was a part of the team that won the National Championship.

The *TEDNA NYCP* **Additional Key Personnel** are qualified and experienced program administrators with implementation and support experience. Their current and past projects include working with local schools (LEAs) nationwide and supporting tribal education departments.

ACT's national point person to this project is Juan Garcia, Assistant Vice President for ACT Client Relations. Juan oversees the Strategic Partnerships division of Client Relations for ACT, working with existing and new partnerships fulfilling ACT's mission of helping people achieve education and workplace success. Prior to joining ACT, he served as a champion of college access and readiness for the Iowa College Access Network (ICAN). As the Executive Director of ICAN, Juan established relationships with school, district administration, state and other nonprofits to reach at-risk students, ensuring that these students were aware of the support that was available to them for pursuit of higher education. ACT's principle state level contact for the project will be Judy Trice, Senior Account Manager for Oklahoma. Judy has 25+ years of experience in a variety of educator and consultant roles, with the last 13 years spent at ACT. She has had extensive experience working with educators, state agencies and policymakers to share ACT research and facilitate understanding of test data and the ways it can be used to improve opportunities for all students.

Mark Williams will serve as the liaison for the Academic Development Institute (ADI). As well as other duties, he provides expertise to the Center on Innovation in Learning in career and technical education (CTE), as well as educational technology. Mark is the Vice-President for Institutional Advancement at the Academic Development Institute (ADI), where he is responsible for working with state and district partners to provide research, training, and tools for leadership and supervision of rapid district and school improvement. A former high school teacher, Mark served as the Illinois state director for career and technical education from 2005 to 2012, during which time he received several awards for his contribution to career and technical education (CTE) and exercised national leadership in organizations dedicated to CTE and the promotion of college and career readiness. Working with Mark will be Dr. Sam Redding, Executive Director of the

Academic Development Institute, who will provide expertise in the areas of school management, social and emotional learning, family-school relationships, school improvement, and the factors that affect student learning. Sam draws on his experiences as a teacher, dean, administrator, and author to bring his own combination of leadership, wisdom, and innovative thinking to the CIL team. He was co-editor of the *Handbook on Innovations in Learning*, and is a former high school teacher and college dean and vice-president.

Matt Higdon will provide ongoing leadership to serve Indian students in Oklahoma. He has a Bachelor and Master's degrees in Education and is Assistant Director for Student Preparation in the State Regents' office. His experiences include 19 years as a teacher and coach at the middle/high school level and 4 years as a building principal. Responsibilities at the State Regents' include presenting EPAS data to K12 districts across the state, presenting at state and regional conferences, and evaluating the STEM Summer Academies. Beginning in 2014 Matt began conducting regional retreats for K-12 Indian Education Directors and others involved with Indian education. The purpose of these retreats is to provide Indian Education Directors information and training related to college access and to build a professional network of Indian Educators within Oklahoma.

Matt Campbell joined the Native American Rights Fund as a staff attorney in March of 2013. Prior to joining NARF, Matt was an attorney with Cuddy & McCarthy, LLP, in New Mexico, focusing his practice on Indian law, education, water law, and general civil litigation. Prior to that, Matt clerked for the Arizona Court of Appeals, Division One, with now retired Judge Patrick Irvine. Matt received his J.D. from the Sandra Day O'Connor College of Law at Arizona State University. While attending law school, Matt worked with the Indian Legal Clinic and also clerked for Bledsoe-Downs and Rosier, PC. Matt received his B.A. from Fort Lewis College. In 2005, Matt attended the Pre-Law Summer Institute for American Indians and Alaska Natives ("PLSI"), and in 2006, Matt was a tutor for PLSI. Matt is admitted to practice before the state courts of New Mexico and Colorado, the United States District Courts for New Mexico and Arizona, the Third Circuit Court of Appeals, and the Pueblo of Isleta. Matt is an enrolled member of the Native Village of Gambell on the Saint Lawrence Island in Alaska. Matt will be providing support and professional development regarding Tribal Education Codes, data privacy and sharing topics, and other legal supports relevant to Tribal Education Departments.

Dee Tadlock, Ph.D, Read Right's president, has implemented tutor training projects in 14 Native communities. Tom Brown, CFO has been an active TEDNA Associate since 2003 for Read Right, a leader in providing effective reading programs for children, teens, and adults. Read Right Systems is innovative and unique in that it advances a paradigm shift in the field of reading and, thus, constitutes a forward-thinking challenge to current and historical thinking in that field. Impressive results achieved by students using the Read Right Intervention Program (for Grades 3-12 and adults) that quickly transforms struggling readers to excellent readers in a matter of months—not years. Students in the Read Right Primary Core Curriculum (for Grades K-3) develop into excellent readers from the beginning.

CHiXapkaid (Dr. Michael Pavel) will serve as external evaluator for the *TEDNA NYCP Project.* He is the owner of Tuwaduq Cultural & Research Institute, a well-established company that provides high quality resources, research, and program evaluation to meet the education needs of Indigenous students, families, and communities. He has published widely on factors influencing the social and academic success of Indian students, integrating Native language and culture into school curricula and supports, assisting teachers to teach Indian students, and professional development to school personal on cultivating meaningful relationships with Native families and tribal communities. A nationally renowned Indigenous scholar, CHiXapkaid has been a successful professor at three major research universities, taught advanced program evaluation courses to doctoral students, and has an extensive list of publications, professional reports, consultancies, and evaluations of many programs specifically designed to serve Native peoples. He has received numerous awards and honors for his teaching, research, and service recognizing his commitment to advance public understanding about the education of Indigenous peoples.

ADEQUACY OF RESOURCES

Partners in the *TEDNA NYCP Project* have demonstrated the commitment, capacity and resources to manage the project through the successful management of previous projects. In particular, TEDNA leadership will provide connections over the project that will include access to resources for tutor training, staff training, evaluation oversight, publication support, technology support, coordination of related programs, staffing for participation in activities and administrative oversight of the project. Fiscal services for the project will be supported through the Cheyenne Arapahoe Tribe as they are versed in Federal Reporting (See attached Fiscal Letter of Agreement)

The Tribal Education Directors are widely, deeply and appropriately experienced for the leadership and hands-on management of this project. (See resumes attachment for details). Each of the four Education Specialists (one per tribe) funded by and dedicated to this project. Each will provide the on-the-ground connection and coordination of effort among students, families, tribal members, LEAs, TEDNA, and collaborating contractors. (See attached job description for more details.) Each of the four tribes can and will provide office and tutoring space and student online access to Read Right's reading tutors and ACT Aspire, Engage, and Profile tools. Our five collaborating schools have joined this effort to honor their commitment to our Native students and will participate with enthusiasm. (See attached MOU letters.)

Our five collaborating contractors all have deep, extensive, relevant and highly regarded national experience in delivering and supporting exceptional products and services. TEDNA leadership has high confidence in achieving exceptional commitment and contribution to this project having worked with leaders of four of these contractors over the past 2 to 15 years and all of whom have participated in weekly meetings and contributed their expertise leading up to this proposal. (See attached letters of support) However, the *TEDNA NYCP Project* participants recognize that the real benefits from all these resources focused at the local level will be the students and their families and their tribe. They will also serve and be empowered to be a primary asset to be leveraged in this project.

QUALITY OF EXPERIENCE

Mark Williams is an Additional Key Personnel in the *TEDNA NYCP Project* and he will serve as the liaison for Center on Innovations in Learning (CIL) as he provides expertise to the Center on Innovation in career and technical education, as well as educational technology. Mark is the vice president for institutional advancement at CIL's partner organization, the Academic Development Institute (ADI), where he is responsible for working with state and district partners to provide research, training, and tools for leadership and supervision of rapid district and school improvement.

In 2012, ADI formed the Indistar Network of 26 states that adopted ADI's web-based Indistar system for school improvement, a system that now guides school improvement by school-based teams in more than 11,000 schools. Indistar is stocked with research briefs, aligned with indicators of effective practice, linked to video demonstrations, and facilitates coaching from the district and state. The system is based on performance management methodology. ADI provides technical assistance to the 26 state education agencies.

In 2012, ADI was a partner in three successful grant applications to create new content centers funded by the U. S. Department of Education. With its longtime partner, Temple University, ADI formed the Center on Innovations in Learning. With WestED, ADI established a Center on School Turnaround, and with Edvance Research it launched the Building State Capacity and Productivity Center. Also in 2012, ADI was awarded a grant by the U. S. Department of Education to work with the State of Idaho and the Nez Perce tribe; this project was based on ADI's several years of work with the Bureau of Indian Education and its schools in 23 states.

The *TEDNA NYCP Project* also is receiving the experience and support from ACT who conducted a comprehensive analysis of 109 studies examining the relations between psychosocial factors and college success (Robbins et al., 2004). The data from over 20 years of research with approximately 150,000 students consistently show that motivational and academic skill, social engagement, and self-management factors predict college student engagement, performance, and degree completion. These factors also are amenable to change, and, when measured early in the students' program of study, provide educators and students with a clear avenue for intervention.

Through the administration of ACT Engage, students and their Education Specialists will identify student strengths and areas for improvement in motivation and skills, social factors, and self-management. Scores on each ACT Engage scale provide an avenue for identifying and intervening with at-risk students. Further, each ACT Engage scale yields results that can be used in specifying appropriate interventions for at-risk students. ACT Engage will also be used in this conjunction with an ACT assessment called ACT Aspire.

QUALITY OF THE MANAGEMENT PLAN

Adequacy of the Management Plan. The *TEDNA NYCP Project* will be managed within the Tribal Education Department National Assembly under the Executive Director who resides in

Oklahoma and closely connected through the TEDNA Board to each of these education departments (please refer to the "Quality of Project Personnel" section). The four Education Specialists will devote 100% of their time to the project providing a powerful site-based support team for the Indian student cohorts as they progress through Grade 6-9. The Education Specialist will also connect with respective families, community, and local LEAs.

Monthly meetings at each site that include at a minimum (education director, Education Specialist, and site LEA staff that could be the principal, counselor, or teachers) will be held to review program implementation progress and determine the degree to which project services are being implemented as planned. The summary of results from each of these site team meetings will be reviewed at quarterly partnership meetings at which the entire partnership comes together to provide feedback for project and site staff on implementation. Specifically, feedback will target addressing evaluation questions and data indicating the degree to which objectives have been achieved (please refer to the evaluation section for more detail). At the site level, information from the monthly site team meetings and quarterly partnership meetings will be shared with each school's staff and school site council (which includes administrator, teacher, classified staff, parent, and student representatives) to provide monthly opportunities for feedback regarding project implementation. The Project Director and support staff will be responsible for ensuring that the feedback loops within each site and for the project as a whole are functioning as designed. In addition, a TEDNA NYCP parent advisory committee will be developed at each site to provide information for parents and to give parents an opportunity to provide input into the program and practice leadership skills developed during parent education activities. Implementation status and progress toward the achievement of objectives will also be presented to the parent advisory groups for feedback. The schedule of the site parent advisory groups will be determined by the parents at each site, but will take place no less than quarterly.

The *TEDNA NYCP Project* will focus on performance indicators that correspond directly to Grades 6-9 for Indian students with many of the measures being linked to early high school performance and college success. Indian students and their families will benefit from this early awareness focus to stay "on-track" to succeed in and graduate from high school, and ultimately be college and career ready.

The TEDNA NYCP Project **Objectives** are based on the identified needs, opportunities, barriers, and scientifically based research of the partners to increase College and Career Readiness. The following are the objectives supportive to achievement of the goal:

A. To increase the academic *Achievement* of participating Indian students in Grades 6-9 to be College and Career Ready.
B. To increase informed College and Career *Planning* with Indian students in Grades 6-9.
C. To build a College and Career Readiness *Culture* so that everyone, especially educators, community, students, and families ALL believe that Indian students are capable of success in College and Career.

The table on the following pages illustrates the project's activities, corresponding objectives, responsibilities, and timelines. Data collection timelines are clearly defined in the evaluation section.

Objective	Activity	Person Responsible	Timeline			
			Yr 1	Yr 2	Yr 3	Yr 4
	Hire/Assign staff	ED				
	Provide pre-service training for staff	PD, ED				
	Site orientations for parents, teachers	ED, ES, AD, P, T, F				
	Create student & parent advisory groups (qtly mtgs)	ED, ES, TR				
	Coordinate tutoring, intervention services	ED, ES, AD				
	Recruit parent leaders	ES, TR, F				
	State assessments	AD, P				
	Career fairs	ED, ES, AD				
	College fairs	ED, ES, AD				
	Community activities	PD, ED, ES, F, TR				
	ACT Aspire & Explore	ED, ES, AD				
	ACT Profile	ES, F, TR, AD				
	Creation of cohort-tracking database	ED, ES				
	Individual & Family Planning	ED, ES, AD				

Objective	Activity	Person Responsible	Timeline			
			Yr 1	Yr 2	Yr 3	Yr 4
	Training for teachers providing test-prep services	ES, ED, PD				
	Family Education	ED, ES, F, TR				
	Financial literacy workshops –FAFSA, Scholarships +	ED, ES, TR				
	Individual progress/attendance tracking	ES, ED				
	Newsletter (2 per year)/website	ED, ES, PD				
	Field trips (high schools/colleges/careers)	ED, ES, P				
	Administer student, parent, teacher project surveys	ES, Evaluator				
	Coordinate tribe assemblies	ED, ES, TR				
	Math content and tutoring	ED, ES, T, AD				
	Reading content and tutoring	ED, ES, T, AD				
	Monthly site meetings	Everyone				
	TEDNA NYCP Meetings	PD, ED, ES				

PD = Project Director; ED= Education Director: ES = Education Specialist; AD = Advisors; TR = Tribe; P = Principals; T = Teachers; F = Families

Continuous Improvement. The *TEDNA NYCP Project* is is designed to maximize the feedback and continuous improvement of the project. As described in the timeline of activities, there is assurance that a diversity of perspectives will be brought to bear on the operation of the project. Parents will have the opportunity to provide input through participating in workshops and completing evaluations at the end of those workshops, participating in site parent advisory committees, and completion of annual project surveys. Teachers will have the opportunity to participate in professional development and will also be able to provide feedback at regular staff meetings, and by completing annual surveys. Both parents and teachers can also provide feedback at any time to members of the site team simply by expressing their ideas or concerns either verbally or in writing. Students have the opportunity to give their perspective through active participation in services, completing evaluations at the end of services, and participation in the annual project survey. A student advisory group will be developed at each site specifically for this purpose and all feedback.

Tribal and Parent Involvement. The TEDNA NYCP Project at each site will develop a parent advisory committee to provide information for parents and to give parents an opportunity to provide input into the program and practice leadership skills developed during parent education activities. Implementation status and progress toward the achievement of objectives will also be presented to the parent advisory groups for feedback. The schedule of the site parent advisory groups will be determined by the parents at each site, but will take place no less than quarterly. The tribe is represented predominantly through the student and family, but will also be able to participate in quarterly partnership meetings and have the opportunity to offer their perspectives to Education Directors and Education Specialists frequently through the daily provision of services.

QUALITY OF THE PROJECT EVALUATION

CHiXapkaid (Dr. Michael Pavel) has agreed to be the external evaluator for the proposed *TEDNA NYCP Project.* He will conduct formative and summative evaluations of the project in a manner that documents major and transformative milestones achieved by TEDNA and participating Tribal Education Departments (TEDs). With the focus on how the project will enable Indian students to achieve college and career readiness by 9th grade, the evaluation will provide credible information to make informed judgments about the adoption, continuation, and/or expansion of efforts related to the following objectives:

- To increase the academic *Achievement* of participating Indian students in Grades 6-9 to be College and Career Ready.
- To increase informed College and Career *Planning* with Indian students in Grades 6-9.
- To build a College and Career Readiness *Culture* so that everyone, especially educators, community, students, and families ALL believe that Indian students are capable of success in College and Career.

Using a strength-based, asset-oriented Indigenous approach to program evaluation, CHiXapkaid has been involved in the development of this proposal to design the initial evaluation plan in partnership with TEDNA and the participating TEDs. The evaluation will use objective performance measures that are clearly related to the intended outcomes of the project and provide guidance about effective strategies suitable for replication or testing in other settings. Data collected will also address GPRA requirements of the percentage of measureable objectives achieved and the increase in collaborative efforts to promote College and career Readiness of Indian children.

If funded, the spirit of collaboration will guide a concerted effort to incorporate the perspectives and feedback of TEDNA and the participating TEDs in developing evaluation questions and the evaluation process to determine type of data needed, data collection methods, data analysis techniques, and reporting strategies. TEDNA and participating TEDs have been given through this proposal development an early awareness about the types of quantitative (i.e., pre- and post-reading and math assessment scores, percentage of students of improving, number of students completing, etc.) and qualitative data (i.e., voices of students, parents, and educators; observations of interactions; transformation of settings, etc.) that can be collected to address pertinent evaluation questions.

These data will be collected through: established record keeping systems at participating schools and tribes; instruments used by ACT; surveys and interview schedules to be developed; and observation documentation tools and other recording devices that include notebooks, narrative field logs, and diaries to record reactions, concerns, and speculations. Printed materials such as handouts, presentation materials, sign-up sheets, meeting agenda/minutes, participant notes, and photographs of situations are also examples of document data that will be gathered throughout the evaluation. The data collection schedule will follow acceptable and already established times associated with such factors as getting pre- and post- measures, when school-wide assessments are administered, and proper or culturally appropriate opportunities to survey and interview critical stakeholders throughout the grant period. The following layout provides an example of data collection and data collection schedule (minimally):

Activities to Observe:

- Professional development for educators on Personal Efficacy self-assessment
- Administration of the ACT Aspire, Engage, and Profile

- Planning and Advising students of available program and support options
- Professional development for educators on incorporating non-cognitive aspects of College and Career Readiness
- Advising session for students to prepare early for college
- Family and community education regarding college application

Student Progress Data

- Survey to measure number of students participating in advanced courses (1X per year)
- Student performance on ACT Engage (Twice a year)
- Student college and career readiness plans reviewed (Twice a year)
- Student performance on State Assessments (1X per year)

Staff Progress Data

- Number attending Tribal Education Code training (1X per year)
- Number attending ACT professional assessment and intervention training (2X per year)
- Tribal Authority reflection and review of Tribal Education Code (1X per year)
- Professional Competency self-assessments and reflection (2X per year)

Program Process Data

- Tribe survey to measure the parent and family participation (1X per year)
- Professional development participation pre- and post-surveys (2X per year)
- End-of-year survey (1X per year)

Quantitative data will be analyzed using acceptable statistical procedures to assess changes and compare those changes within and across participating tribal communities. The intent will be to arrive at interpretation regarding such changes at a particular degree of reliability, and determine whether those changes are likely to have been caused by the *TEDNA NYCP Project*. At the same time, the analytic procedures will be used to identify relationships among different variables. The analysis of qualitative data will follow a multi-step process that begins during the process of collecting and managing the data, becoming more sophisticated while coding and organizing various forms of the qualitative data, identifying and examining the relationship between salient themes and patterns, reconstructing the themes along meaningful interpretations, and drawing conclusions and seeking verification of conclusions.

Every effort will be made to document effective strategies to ensure replication. Year-end reports of results and outcomes will be available within 30 days at the conclusion of each fiscal grant cycle. A commitment has been made to the participating TEDs to use information collected throughout the evaluation to monitor progress of the funded project more frequently (especially during the formative period of the grant) and to provide accountability information both about success at each participating tribal site and effective strategies for replication in other settings. A schedule of on-going updates and sharing within and across sites will involve monthly conference calls complemented by regular email exchanges, social media networking, and quarterly reports from each site delivered in the form of written briefs describing progress made and significant achievements, as well as inhibiting factors encountered and that were overcome (and how). Replication will depend on conveying a compelling story that will be directed to the widest audience possible including but not limited to policymakers, practitioners, parents, and most importantly the students.

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ATTACHMENT A

Memorandum Of Understanding (MOU)

The following MOU's are included in this Appendix:

The TEDNA NYCP Project Goal is to increase College and Career Readiness for Grade 6-9 participating Indian students through improved academic readiness, informed career planning (e.g., based on interests), and building the capacity of the Tribal Education Departments to maintain this College and Career Readiness culture.

Project Lead: Tribal Education Department National Assembly (TEDNA)

Montana
Northern Cheyenne Tribe
Northern Cheyenne Tribal School [BIE-Funded])

Oklahoma
Absentee Shawnee Tribe & Little Axe School District
Muscogee Creek Nation & Bristow Public Schools
Cheyenne and Arapaho Tribe & Darlington Public Schools & El Reno Public School District.

Memorandum of Understanding

This Memorandum of Understanding (MOU) is entered into by the following partners:

- Tribal Education Departments National Assembly (TEDNA)
- Northern Cheyenne Tribal Education Department (TEA)
- Northern Cheyenne Tribal Schools (LEA)

The following signed and executed MOU provides evidence of a strong partnership and commitments for program design, implementation, oversight, supervision, management, evaluation and program improvement related to Native American student career and/or college readiness.

Upon mutual written accord this MOU may be modified, extended or terminated.

The parties to this MOU will collaborate and perform as follows:

TEDNA will:

- Provide leadership and foster collaboration among Northern Cheyenne Tribal Education Department (TEA), Northern Cheyenne Tribal Schools (LEA) and multiple organizations supportive of this proposed project.
-
- Provide leadership and resources in support of grant application(s) in support of this project.
- Provide leadership and facilitate communication with regard to project design, planning, budgeting, proposal submission, and project-defined Implementation, documentation and sharing of project processes, findings and recommendations.
- Recognize, support and encourage Northern Cheyenne Tribal Education Department (TEA) and the Northern Cheyenne Tribal Schools (LEA) rights to define and reach their own education goals for their students, families, and both local and extended communities.
- Provide Northern Cheyenne Tribal Education Department(TEA) and Northern Cheyenne Tribal Schools (LEA) with training via webinar, as services and opportunities become available, for a variety of subjects/topics to include but not limited to how to connect with staff, parents and students via the web.

The Northern Cheyenne Tribal Education Department (TEA) will:
With regard to project planning:

- Identify the number of 6th, 7th, 8th and 9th grade Native students currently served, and,
- The numbers of students they could commit to serve and track with this project, and,

- The number of students they could commit to the reading improvement component of this project (up to 8)

With regard to project staffing and implementation:

- Identify personnel (potentially including contract staff, other community agency staff, parents and/or other individuals who will commit to proactively supporting this project. The project staff functions needed would include leadership, communication, oversight, implementation, recordkeeping and reporting and would likely include fractional time from current personnel.
- Identify how students participating the reading improvement component of this project will access high-speed internet connections. (Four simultaneous connections are required but may be in different physical locations.)

With regard to project budgeting:

- Estimate current annual spending on services related to career and college readiness.
- Given proposed staffing estimate additional spending to be devoted to career and college readiness.

The Northern Cheyenne Tribal Schools[LEA] will:
With regard to project planning:

- Identify the number of 6th, 7th, 8th and 9th grade Native students currently served, and,
- The numbers of students they could commit to serve and track with this project, and,
- The number of students they could commit to the reading improvement component of this project (up to 8).

With regard to project staffing and implementation:

- Identify personnel (potentially including contract staff, other community agency staff, parents and/or other individuals who will commit to proactively supporting this project. The project staff functions needed would include leadership, communication, oversight, implementation, recordkeeping and reporting and would likely include fractional time from current personnel.
- Identify how students participating the reading improvement component of this project will access high-speed internet connections. (Four simultaneous connections are required but may be in different physical locations.)

3.The LEA will provide (agree to):

Collaborate with the TEA to assist sixth grade NA students/parents to establish an access to the web via the ACT Promise and/or other local resources.

4.The TEA will provide (agree to):

Collaborate with the LEA to assist sixth grade NA students/parents to establish an access to the web via the ACT Promise and/or other local resources.

5.This agreement may be amended by all parties as needed given (30) thirty day advance notice and approval of project funder(s).

Signed:

(b)(6) [redacted]

6/26/15

Dr. Wayne Johnson, President, TEDNA Date

6/21/15

Frank No Runner
Northern Cheyenne Tribal Schools (LEA Superintendent) Date

(b)(6) [redacted]

6 23/15

Norma Bixby (TEA Director) Date

Absentee Shawnee Tribe Of Oklahoma
2025 South Gordon cooper Drive
Shawnee, Oklahoma 74801-9381

Education Department

Memorandum of Understanding

This Memorandum of Understanding (MOU) is entered into by the following partners:

- Tribal Education Departments National Assembly (TEDNA)
- Absentee Shawnee Tribe of Oklahoma (TEA)
- Little Axe Public Schools (LEA)

The following signed and executed MOU provides evidence of a strong partnership and commitments for program design, implementation, oversight, supervision, management, evaluation, and program improvement related to Native American student career and/or college readiness.

Upon mutual written accord this MOU may be modified, extended or terminated.

The parties to this MOU will collaborate and perform as follows:

TEDNA will:

- Provide leadership and foster collaboration among the Absentee Shawnee Tribe Education Department, Little Axe Public Schools, and multiple organizations supportive of this proposed project, including but not limited to ACT, the Academic Development Institute (ADI), the Native American Rights Fund (NARF) and Read Right Systems.
- Provide leadership and resources in support of grant application(s) in support of this project.
- Provide leadership and facilitate communication with regard to project design, planning, budgeting, proposal submission, and project-defined Implementation, documentation and sharing of project processes, findings and recommendations.
- Recognize, support, and encourage the Absentee Shawnee Tribe Education Department and Little Axe Public Schools rights to define and reach their own education goals for their students, families, and both local and extended communities.
- Provide the Absentee Shawnee Tribe Education Department and Little Axe Public Schools with training via webinar, as services and opportunities become available, for a variety of subjects/topics to include but not limited to how to connect with staff, parents and students via the web.

PHONE 405.275.4030 • 1.800.256.3341 • 405.273.7938

The Absentee Shawnee Tribe Education Department will:
With regard to project planning:

- Identify the number of 6th, 7th, 8th and 9th grade Native students currently served, and,
- The numbers of students they could commit to serve and track with this project, and,
- The number of students they could commit to the reading improvement component of this project (up to 8)

With regard to project staffing and implementation:

- Identify personnel (potentially including contract staff, other community agency staff, parents and/or other individuals who will commit to proactively supporting this project. The project staff functions needed would include leadership, communication, oversight, implementation, recordkeeping and reporting and would likely include fractional time from current personnel.
- Identify how students participating the reading improvement component of this project will access high-speed internet connections. (Four simultaneous connections are required but may be in different physical locations.)

With regard to project budgeting:

- Estimate current annual spending on services related to career and college readiness.
- Given proposed staffing estimate additional spending to be devoted to career and college readiness.

Little Axe Public Schools will:
With regard to project planning:

- Identify the number of 6th, 7th, 8th and 9th grade Native students currently served, and,
- The numbers of students they could commit to serve and track with this project, and,
- The number of students they could commit to the reading improvement component of this project (up to 8).

With regard to project staffing and implementation:

- Identify personnel (potentially including contract staff, other community agency staff, parents and/or other individuals who will commit to proactively supporting this project. The project staff functions needed would include leadership, communication, oversight, implementation, recordkeeping and reporting and would likely include fractional time from current personnel.
- Identify how students participating the reading improvement component of this project will access high-speed internet connections. (Four simultaneous connections are required but may be in different physical locations.)

3.The LEA will provide (agree to):

Collaborate with the TEA to assist sixth grade NA students/parents to establish an access to the web via the ACT Promise and/or other local resources.

4.The TEA will provide (agree to):

Collaborate with the LEA to assist sixth grade NA students/parents to establish an access to the web via the ACT Promise and/or other local resources.

5. This agreement may be amended by all parties as needed given (30) thirty day advance notice and approval of project funder(s).

Signed:

(b)(6) 6/26/15

Dr. Wayne Johnson, President, TEDNA Date

6/22/15

Tony Smith, Superintendent, Little Axe Public Schools Date

(b)(6) 6-22-15

Tresha Spoon, Director of Education, Absentee Shawnee Tribe Date

Memorandum of Understanding

This Memorandum of Understanding (MOU) is entered into by the following partners:

- Tribal Education Departments National Assembly (TEDNA)
- Muscogee (Creek) Nation Department of Education and Training, Okmulgee, OK
- Bristow Public Schools, Bristow, OK

The following signed and executed MOU provides evidence of a strong partnership and commitments for program design, implementation, oversight, supervision, management, evaluation and program improvement related to Native American student career and/or college readiness.

Upon mutual written accord this MOU may be modified, extended or terminated.

The parties to this MOU will collaborate and perform as follows:

TEDNA will:

- Provide leadership and foster collaboration among Muscogee (Creek) Nation Department of Education and Training, Bristow Public Schools and multiple organizations supportive of this proposed project, including but not limited to American College Testing and others.
- Provide leadership and resources in support of grant application(s) in support of this project.
- Provide leadership and facilitate communication with regard to project design, planning, budgeting, proposal submission, and project-defined Implementation, documentation and sharing of project processes, findings and recommendations.
- Recognize, support and encourage Muscogee (Creek) Nation Department of Education and Training and Bristow Public Schools rights to define and reach their own education goals for their students, families, and both local and extended communities.
- Provide Muscogee (Creek) Nation Department of Education and Training and Bristow Public Schools with training via webinar, as services and opportunities become available, for a variety of subjects/topics to include but not limited to how to connect with staff, parents and students via the web.

Muscogee (Creek) Nation Department of Education and Training will:
With regard to project planning:

- Identify the number of 6^{th}, 7^{th}, 8^{th} and 9^{th} grade Native students currently served, and,
- The numbers of students they could commit to serve and track with this project, and,
- The number of students they could commit to the reading improvement component of this project (up to 8)

With regard to project staffing and implementation:

- Identify personnel (potentially including contract staff, other community agency staff, parents and/or other individuals who will commit to proactively supporting this project. The project staff functions needed would include leadership, communication, oversight, implementation, recordkeeping and reporting and would likely include fractional time from current personnel.
- Identify how students participating in the reading improvement component of this project will access high-speed internet connections. (Four simultaneous connections are required but may be in different physical locations.)

With regard to project budgeting:

- Estimate current annual spending on services related to career and college readiness.
- Given proposed staffing estimate additional spending to be devoted to career and college readiness.

Bristow Public Schools will:
With regard to project planning:

- Identify the number of 6^{th}, 7^{th}, 8^{th} and 9^{th} grade Native students currently served, and,
- The numbers of students they could commit to serve and track with this project, and,
- The number of students they could commit to the reading improvement component of this project (up to 8).

With regard to project staffing and implementation:

- Identify personnel (potentially including contract staff, other community agency staff, parents and/or other individuals who will commit to proactively supporting this project. The project staff functions needed would include leadership, communication, oversight, implementation, recordkeeping and reporting and would likely include fractional time from current personnel.
- Identify how students participate in the reading improvement component of this project will access high-speed internet connections.

3.The LEA will provide (agree to):

Collaborate with the TEA to assist sixth grade NA students/parents to establish an access to the web via the ACT Promise and/or other local resources.

4.The TEA will provide (agree to):

Collaborate with the LEA to assist sixth grade NA students/parents to establish an access to the web via the ACT Promise and/or other local resources.

5.This agreement may be amended by all parties as needed given (30) thirty day advance notice and approval of project funder(s).

(b)(6) [redacted]

Signed:

(b)(6) [redacted] 6/26/15

Dr. Wayne Johnson, President, TEDNA — Date

Curtis Shelton 6/25/2015

Mr. Curtis Shelton, Superintendent
Bristow Public Schools, Bristow, OK — Date

(b)(6) [redacted] 6.26.15

George Tiger, Principal Chief
Muscogee (Creek) Nation — Date

Memorandum of Understanding

This Memorandum of Understanding (MOU) is entered into by the following partners:

Tribal Education Departments National Assembly (TEDNA)

Cheyenne Arapaho Department of Education, Concho, OK

Darlington Schools, El Reno, OK

The following signed and executed MOU provides evidence of a strong partnership and commitments for program design, implementation, oversight, supervision, management, evaluation and program improvement related to Native American student career and/or college readiness.

Upon mutual written accord this MOU may be modified, extended or terminated.

The parties to this MOU will collaborate and perform as follows:

TEDNA will:

- Provide leadership and foster collaboration among Cheyenne Arapaho Department of Education, El Reno Public Schools and multiple organizations supportive of this proposed project, including but not limited to American College Testing and others.

- Provide leadership and resources in support of grant application(s) in support of this project.

- Provide leadership and facilitate communication with regard to project design, planning, budgeting, proposal submission, and project-defined Implementation, documentation and sharing of project processes, findings and recommendations.

- Recognize, support and encourage Cheyenne Arapaho Department of Education) and Darlington Schools, El Reno, OK, rights to define and reach their own education goals for their students, families, and both local and extended communities.

- Provide Cheyenne Arapaho Department of Education and Darlington Schools, El Reno, OK, with training via webinar, as services and opportunities become available, for a variety of subjects/topics to include but not limited to how to connect with staff, parents and students via the web.

Cheyenne Arapaho Department of Education will:

With regard to project planning:

- Identify the number of 6th, 7th, 8th and 9th grade Native students currently served, and the numbers of students they could commit to serve and track with this project, and,
- The number of students they could commit to the reading improvement component of this project (up to 8)

With regard to project staffing and implementation:

- Identify personnel (potentially including contract staff, other community agency staff, parents and/or other individuals who will commit to proactively supporting this project. The project staff functions needed would include leadership, communication, oversight, implementation, recordkeeping and reporting and would likely include fractional time from current personnel.
- Identify how students participating in the reading improvement component of this project will access high-speed internet connections.

With regard to project budgeting:

- Estimate current annual spending on services related to career and college readiness.
- Given proposed staffing estimate additional spending to be devoted to career and college readiness.

Darlington Schools, El Reno, OK will:

With regard to project planning:

- Identify the number of 6th, 7th, 8th and 9th grade Native students currently served, and,
- The numbers of students they could commit to serve and track with this project, and,
- The number of students they could commit to the reading improvement component of this project (up to 8).

With regard to project staffing and implementation:

- Identify personnel (potentially including contract staff, other community agency staff, parents and/or other individuals who will commit to proactively supporting this project. The project staff functions needed would include leadership, communication, oversight, implementation, recordkeeping and reporting and would likely include fractional time from current personnel.

- Identify how students who are participating in the reading improvement component of this project will access high-speed internet connections.

3.The Darlington Schools, El Reno, OK will provide (agree to):

Collaborate with the Cheyenne Arapaho Department of Education to assist sixth grade NA students/parents to establish an access to the web via the ACT Promise and/or other local resources.

4.The Cheyenne Arapaho Department of Education will provide (agree to):

Collaborate with the Darlington Schools, El Reno, OK to assist sixth grade NA students/parents to establish an access to the web via the ACT Promise and/or other local resources.

5.This agreement may be amended by all parties as needed given (30) thirty day advance notice and approval of project funder(s).

(b)(6) [redacted]

Signed: (b)(6) [redacted] 6/26/15

Dr. Wayne Johnson, President, TEDNA — Date

6-22-15

Ms Cheryl Garrison, Superintendent — Date
Darlington Schools, El Reno, OK

(b)(6) [redacted] 6/23/15

Funston Whiteman, Executive Director — Date
Cheyenne Arapaho Department of Education
Concho, Ok

Memorandum of Understanding

This Memorandum of Understanding (MOU) is entered into by the following partners:

- Tribal Education Departments National Assembly (TEDNA)
- Cheyenne Arapaho Department of Education, Concho, OK
- El Reno Public Schools, El Reno, OK

The following signed and executed MOU provides evidence of a strong partnership and commitments for program design, implementation, oversight, supervision, management evaluation and program improvement related to Native American student career and/or college readiness.

Upon mutual written accord this MOU may be modified, extended or terminated.

The parties to this MOU will collaborate and perform as follows:

TEDNA will:

- Provide leadership and foster collaboration among Cheyenne Arapaho Department of Education, El Reno Public Schools and multiple organizations supportive of this proposed project, including but not limited to American College Testing and others.
- Provide leadership and resources in support of grant application(s) in support of this project.
- Provide leadership and facilitate communication with regard to project design, planning, budgeting, proposal submission, and project-defined implementation, documentation and sharing of project processes, findings and recommendations.
- Recognize, support and encourage Cheyenne Arapaho Department of Education) and El Reno Public Schools' rights to define and reach their own education goals for their students, families, and both local and extended communities.
- Provide Cheyenne Arapaho Department of Education and El Reno Public Schools with training via webinar, as services and opportunities become available, for a variety of subjects/topics to include but not limited to how to connect with staff, parents and students via the web.

Cheyenne Arapaho Department of Education will:

With regard to project planning:

- Identify the number of 6th, 7th, 8th and 9th grade Native students currently served, and the numbers of students they could commit to serve and track with this project, and,

- The number of students they could commit to the reading improvement component of this project (up to 8)

With regard to project staffing and implementation:

- Identify personnel (potentially including contract staff, other community agency staff, parents and/or other individuals who will commit to proactively supporting this project. The project staff functions needed would include leadership, communication, oversight, implementation, recordkeeping and reporting and would likely include fractional time from current personnel.
- Identify how students participating in the reading improvement component of this project will access high-speed internet connections.

With regard to project budgeting:

- Estimate current annual spending on services related to career and college readiness.
- Given proposed staffing estimate additional spending to be devoted to career and college readiness.

El Reno Public Schools will:
With regard to project planning:

- Identify the number of 6^{th}, 7^{th}, 8^{th} and 9^{th} grade Native students currently served, and,
- The numbers of students they could commit to serve and track with this project, and,
- The number of students they could commit to the reading improvement component of this project (up to 8).

With regard to project staffing and implementation:

- Identify personnel (potentially including contract staff, other community agency staff, parents and/or other individuals who will commit to proactively supporting this project. The project staff functions needed would include leadership, communication, oversight, implementation, recordkeeping and reporting and would likely include fractional time from current personnel.
- Identify how students who are participating in the reading improvement component of this project will access high-speed internet connections.

3.El Reno Public Schools will provide (agree to):

Collaborate with the Cheyenne Arapaho Department of Education to assist sixth grade NA students/parents to establish an access to the web via the ACT Promise and/or other local resources.

4.The TEA will provide (agree to):

Collaborate with the LEA to assist sixth grade NA students/parents to establish an access to the web via the ACT Promise and/or other local resources.

5.This agreement may be amended by all parties as needed given (30) thirty day advance notice and approval of project funder(s).

Signed: (b)(6) [redacted]

(b)(6) [redacted] 6/26/15

Dr. Wayne Johnson, President, TEDNA Date

6-21-2015

Dr. Craig McVay, Superintendent Date
El Reno Public Schools, El Reno, OK

(b)(6) [redacted] 6/22/15

Funston Whiteman, Executive Director Date
Cheyenne Arapaho Department of Education
Concho, Ok

ATTACHMENT B

Key Personnel

The following Key Personnel are included in this Appendix:

The TEDNA NYCP Project Goal is to increase College and Career Readiness for Grade 6-9 participating Indian students through improved academic readiness, informed career planning (e.g., based on interests), and building the capacity of the Tribal Education Departments to maintain this College and Career Readiness culture.

Project Lead: Tribal Education Department National Assembly (TEDNA)

Executive Director:	Quinton Roman Nose
Project Director:	Job Description
Support Staff:	Job Description
Fiscal Agent:	Letter of Agreement – Cheyenne Arapaho Tribe
Education Specialist:	Job Description
Evaluator:	CHiXapkaid (Michael Pavel)

Partner Tribal Education Department Representative:

- Norma Bixby, Northern Cheyenne Tribe
- Tresha Spoon, Absentee Shawnee Tribe
- James Bates, Jr., Cheyenne-Arapaho Tribes
- Dr. Wayne Johnson, Muscogee Creek Nation

Partner:

Mark Williams is the vice president for institutional advancement at CIL's partner organization, the Academic Development Institute, where he is responsible for working with state and district partners to provide research, training, and tools for leadership and supervision of rapid district and school improvement.

Quinton Roman Nose
P.O. Box 392, Watonga, OK
Phone: (580)623-7469 | (b)(6)
E-mail: qromannose@tedna.com
Website: www.tedna.org

Promote and develop educational initiatives and opportunities to improve the educational levels of Native American and Native Alaskan students and tribal members.

EDUCATION:

Aug 92 - July 93, Graduate Studies: Gifted/Talented Education at OCU, OKC, OK
Aug 70 - May 74, Undergraduate Studies: Mathematics at SWOSU, Weatherford, OK

EXPERIENCE:

Tribal Education Departments National Assembly (TEDNA)
Executive Director, October 2011 - Present

TEDNA's mission is to assemble and represent collectively indigenous sovereign nations' departments of education; respect and honor each nation's distinct spiritual, cultural, linguistic, and economic identities; foster effective relationships with other governmental and educational agencies, organizations, and entities; facilitate communication and cultivate consensus amongst members by, among other things, providing current, accurate, and pertinent information to members; and support and encourage each member nation's right to define and reach its own education goals for its students, families, and communities wherever they may be located.

- Annual and regional TED meetings aligned with NIEA and NCAI annual meetings
- Congressional testimony on federal appropriations for TEAs and other Indian Education issues
- Testimony and consultation to establish STEP Program
- Collaboration with NARF, NIEA, NCAI and Indian Land Tenure Association

Co-founder with Joyce Silverthorne and Jerome Jainga and the support of NARF, 2003

- Board President 2009 – 2011

National Indian Education Association

- President, Board of Directors 2011 - 2012
- Board Member 2009 – 2012

Cheyenne Arapaho Department of Education
Executive Director, 2003-2010

Administration of education grants and contracts, supervised coordinators for Adult Education, JOM, Higher Education, Head Start, Child Care, Title VII Indian Education, Tribal Youth Program (Department of Justice grant), Gear Up Program (state funded grant), Distance Learning courses, Arapaho and Cheyenne language classes and other tribal educational programs.

- Collaborated with external education entities on Native educational issues.
- Worked with outside educational entities to develop Indian Education activities/opportunities and the development of Cheyenne and Arapaho Language classes.
- Developed and presented the Tribal Council resolution which established the Cheyenne Arapaho Tribal College, Weatherford, OK

CAREER ACCOMPLISHMENTS:

As Tribal Education Director

- Increased college student funding from $1000 to 2000/2500 per semester for up to 150 students a year and maintained a college scholarship fund which reached almost $2 million dollars.
- Won new grants from US ED and HHS (ANA) and State of Oklahoma.
- Established a web- based Higher Education student portal system for our students who are located in in several states.
- Established several distance learning classrooms for Cheyenne and Arapaho Language courses at high schools and colleges
- Presented "The Importance of Native American Student Data" in Washington DC sponsored by Campaign for High School Equity.
- Established an annual Cheyenne Arapaho Studies Conference at Denver, CO
- Presented testimony at a US Congressional appropriations hearing and attended the signing of the President Executive Order on Indian Education.
- Developed Tribal Council resolution establishing Cheyenne Arapaho Language classes.
- Developed Tribal Council resolution which established the Cheyenne Arapaho Tribal College

OTHER COLLABORATIONS:

- Teamed with Indian Educators to pass Oklahoma State legislation establishing an Oklahoma Indian Education Advisory Council.
- Teamed with Tribal Education Department directors advocating US Congress approval of $2 million for tribal education departments/agencies in the FY12 federal budget.
- Teamed with outside organizations and agencies to promote student success including placing 20 students in various summer programs (Upward Bound programs at CU, SWOSU, AISES summer programs at several universities, a middle school science program at OSU) in one summer.
- Worked with Cheyenne Arapaho to establish a distance learning Cheyenne Language program to extend the reach of a program with 10 years experience.
- Worked with Darlington Boys and Girls Club to establish a Native American Boys and Girls Club afterschool program at Hammon School.

OTHER PROFESSIONAL MEMBERSHIPS:

- Board Member, Oklahoma Native American Youth Language Fair (ONAYLF), University of Oklahoma, 2003 to present
- President, Oklahoma Indian Higher Education Scholarship Administrators Association OIHESAA), 2007-2009
- President, School Board, Riverside Indian School, BIE funded, Anadarko, OK, 2005 to present
- Vice President, Bacone College Board of Trustees, Muskogee, OK, 2013 to present

MILITARY EXPERIENCE:

Officer (2LT), Field Artillery, USA Army, Active Duty Aug 1974 to Aug 1976
Duties: Training Officer and Executive Officer for Pershing Missile Training Battery, Ft Sill, OK

Position Description

TEDNA NYCP PROJECT

Position: **TEDNA NYCP Project Director**

Location: **Tribal Education Department National Assembly (Montana or Oklahoma)**

General Description:

Under the Direct supervision of the TEDNA Executive Director, the incumbent performs work in accordance with established program objectives, policies, and procedures. Responsible for establishing a working relationship with tribes enhancing Indian student services, facilitate community involvement by supporting education specialists, conduct and coordinate professional development activities to enhance understanding of culturally—appropriate environment and services to communities.

Description of Duties:

- Facilitate and/or maintain relations with tribes and to bridge communication gaps.
- Establish and/or coordinate programs and services designed to meet the unique education needs of Native American students, parents and community.
- Collaborate with tribal education, health and social service programs for a more comprehensive approach to education related issues.
- Maintain Log for Community regarding progress of activities
- Maintain Files of Seminars/Classes held in various communities. Includes sign-ins and fliers.
- Prepare monthly progress report regarding services provided and workshops provided to community so that information may be included in Monthly and Quarterly Reports to the TEDNA Executive Director
- Promote, establish and assist the school parent committees
- Assist in seeking funding to expand services and establish new services.
- Other duties as assigned by the Executive Director

Qualifications:

- Master's degree in Education or related field preferred, or an equivalent combination of education and experience.
- Exceptional interpersonal skills: Ability to communicate effectively and courteously with participants and/or external entities and the ability to maintain effective working relationships.
- Exceptional organizational skills: Ability to prepare and conducts meetings, trainings, progress reports, fliers and other similar or related materials; and the ability to maintain ongoing documentation regarding services provided.
- Experience working with Native American students within the public school setting.
- Knowledge of native learning styles, policies/regulations, General Education curriculum, and testing procedures.
- Maintain professionalism and environment conducive to learning
- Possess strong skills in modern office procedures and business etiquette; must possess a comprehensive knowledge of computer skills in word, excel and publisher.
- Must possess a Valid Driver's License. Includes having a clean driving record for insurance purposes
- Ability to pass background and fingerprint if applicable check

- Must be willing to perform related travel normally associated with this position
- Maybe be required to work flexible hours including weekends and holidays
- Native Indian Preference

Education and Experience:

Master's Degree in Education or related field preferred; or an equivalent combination of education and work experience, substituting one year of experience in teaching for each year of the required education. Indian tribe affiliation preferred.

***TEDNA NYCP* Support Staff**

Job Responsibilities:

Enhances executive's effectiveness by providing information management support; representing the executive to others.

Job Duties:

- Produces information by transcribing, formatting, inputting, editing, retrieving, copying, and transmitting text, data, and graphics.
- Conserves executive's time by reading, researching, and routing correspondence; drafting letters and documents; collecting and analyzing information; initiating telecommunications.
- Maintains executive's appointment schedule by planning and scheduling meetings, conferences, teleconferences, and travel.
- Represents the executive by attending meetings in the executive's absence; speaking for the executive.
- Welcomes guests and customers by greeting them, in person or on the telephone; answering or directing inquiries.
- Maintains customer confidence and protects operations by keeping information confidential.
- Completes projects by assigning work to clerical staff; following up on results.
- Prepares reports by collecting and analyzing information.
- Secures information by completing data base backups.
- Provides historical reference by developing and utilizing filing and retrieval systems; recording meeting discussions.
- Maintains office supplies inventory by checking stock to determine inventory level; anticipating needed supplies; evaluating new office products; placing and expediting orders for supplies; verifying receipt of supplies.
- Ensures operation of equipment by completing preventive maintenance requirements; following manufacturer's instructions; troubleshooting malfunctions; calling for repairs; maintaining equipment inventories; evaluating new equipment and techniques.
- Maintains professional and technical knowledge by attending educational workshops; reviewing professional publications; establishing personal networks; participating in professional societies.
- Contributes to team effort by accomplishing related results as needed.

Skills and Qualifications:

Writing Skills, Reporting Skills, Supply Management, Scheduling, Microsoft Office Skills, Organization, Time Management, Presentation Skills, Equipment Maintenance, Travel Logistics, Verbal Communication

CHEYENNE & ARAPAHO TRIBES

EXECUTIVE BRANCH
GOVERNOR EDDIE HAMILTON
LT. GOVERNOR CORNELL SANKEY

P.O. Box 167
Concho, OK 73022
Telephone: (405) 422-7733
Fax: (405) 422-8224

June 24, 2015

Tribal Education Departments
National Assembly (TEDNA)
1506 Broadway
Boulder, CO 80302-6296

Dear TEDNA,

We would like to give you notification that the Cheyenne Arapaho Tribes is willing to negotiate a formal agreement which will lead the Cheyenne Arapaho Tribes serving as the fiscal agent, i.e., be responsible for financial reports as require by Office of Indian Education (OIE), US Department of Education based on the NYCP (Native Youth Community Project) grant if TEDNA is awarded a grant. It is understood by both parties that the formal agreement would include payment of services to Cheyenne Arapaho Tribes by TEDNA using NYCP grant monies.

This letter does not obligate to any financial requirements until both TEDNA and Cheyenne Arapaho Tribes sign a formal written agreement.

Sincerely,

(b)(6)

Eddie Hamilton,
Governor

Position Description

TEDNA NYCP PROJECT

Position: **Education Specialist**

Location: **Tribal Education Department**

General Description:

Under the Direct supervision of the Director of Education, incumbent performs work in accordance with established program objectives, policies, and procedures. Responsible for establishing a working relationship with LEAs within tribal service area to enhance Indian student services, facilitate community involvement by empowering native parents, facilitate professional development activities to LEAs to enhance understanding of culturally—appropriate environment and services to communities. Specialist shall maintain ongoing communication and consult with Executive Director of Education Department prior to implementation of activity and/or taking action to unusual problems experienced with LEAs.

Description of Duties:

- Facilitate and/or maintain relations with schools to bridge communication gaps between parents, students and the local LEA.
- Establish and/or coordinate programs and services designed to meet the unique education needs of Native American students, parents and community.
- Collaborate with tribal education, health and social service programs for a more comprehensive approach to education related issues.
- Maintain Log for Community regarding progress of activities
- Maintain Files of Seminars/Classes held in various communities. Includes sign-ins and fliers.
- Prepare monthly progress report regarding services provided or coordinated to LEAs and workshops provided to community so that information may be included in Monthly and Quarterly Reports to the Tribal Education Departments
- Promote, establish and assist the school parent committees
- Compile data of student performance in respective LEAs and services
- Check and connect with Indian students
- Assist in seeking funding to expand services and establish new services.
- Other duties as assigned by the Director of Education Department

Qualifications:

- Bachelor's degree in Education or related field preferred, or an equivalent combination of education and experience substituting one year of experience in teaching for each year of the required education.
- Exceptional interpersonal skills: Ability to communicate effectively and courteously with participants and/or external entities and the ability to maintain effective working relationships.
- Exceptional organizational skills: Ability to prepare and conducts meetings, trainings, progress reports, fliers and other similar or related materials; and the ability to maintain ongoing documentation regarding services provided.
- Experience working with Native American students within the public school setting.
- Knowledge of native learning styles, policies/regulations, General Education curriculum, and testing procedures.

Position Description

- Maintain professionalism and environment conducive to learning
- Possess strong skills in modern office procedures and business etiquette; must possess a comprehensive knowledge of computer skills in word, excel and publisher.
- Must possess a Valid Driver's License. Includes having a clean driving record for insurance purposes
- Ability to pass background and fingerprint if applicable check
- Must be willing to perform related travel normally associated with this position
- Maybe be required to work flexible hours including weekends and holidays
- Native Indian Preference

Education and Experience:

Bachelor's Degree in Education or related field preferred; or an equivalent combination of education and work experience, substituting one year of experience in teaching for each year of the required education. Indian tribe affiliation preferred.

CHiXapkaid (D. Michael Pavel, Ph.D.)

(b)(6)

SELECTED EDUCATION

Traditional Bearer of Southern Puget Salish traditional culture. Training has been ongoing since the age of thirteen, and has primarily focused on learning the language, songs, dances, art, traditions, rituals, history, and ceremonial way of life among the tuwaduq and other Pacific Northwest Salish peoples.

Ph.D., Higher and Adult Education, Arizona State University, Tempe, Arizona, 199. Emphasis on college student development, institutional adaptation, and policy analysis. Dissertation: *Assessing Tinto's Model of Institutional Departure Using American Indian and Alaska Native National Longitudinal Data*.

SELECTED PROFESSIONAL EXPERIENCE

Current — **Owner of Tuwaduq Cultural & Research Institute,** a company located on the Skokomish Indian Reservation that provides high quality resources, presentations, research, and program evaluation to meet the education needs of Native students, families, and communities.

2010-2015 — **Professor of Native American Studies in Education,** College of Education, University of Oregon. Primary responsibilities: Teach and conduct research at a level of quality commensurate to an AAU research university, mentor undergraduate and graduate students, and develop meaningful partnerships throughout the university and with other educational agencies serving American Indian and Alaska Native students, families and communities.

2013-2015 — **Director of Sapsik'^{W}ałá (Teacher) Project.** The purpose of Sapsik'^{W}ałá is to train the next generation of highly qualified Native teachers in the area of curriculum design, instruction strategies, assessment and cultivating relationships with communities.

2007-2010 — **Professor,** Department of Educational Leadership and Counseling Psychology, College of Education, Washington State University. Primary responsibilities: Teach and conduct research at a level of quality commensurate to a major research university, advise undergraduate and graduate students, and develop meaningful partnerships throughout the university and with community colleges, local K-12 schools serving American Indian and Alaska Native students and communities throughout the Northwest.

2007-2010 — **Coordinator**, Higher Education Program, College of Education, Washington State University. Primary responsibilities: Provide leadership and administrative oversight of the Higher Education Programs which includes but not limited to setting up faculty meetings and agenda, developing teaching schedule, hiring instructors, addressing student concerns, and responding to programmatic requests.

2005-2010 — **Director**, Clearinghouse on Native Teaching and Learning, College of Education, Washington State University. Primary responsibilities: Provide leadership and administrative oversight to carry out a research agenda responding to the needs of institutions of higher education and K-12 schools serving American Indian and Alaska Native students and communities.

SELECTED FUNDED GRANTS AND ROLE

$1,222,706 Co-Principal Investigator (with Drs. Jeffery Sprague-PI, Tary Tobin-Co-PI, Claudia Vincent, Heather Robbins, & Mark Van Ryzin), *The Role of Native Language and Culture in Decreasing Discipline Problems and Increasing*

Academic Achievement for American Indian/Alaska Native Students, National Institute for Education Sciences (NIES), 2014-2017

$750,000 Principal Investigator, *Sapsik'ʷałá: An Indigenous Community Project III, U.S. Department of Education,* 2013-2015

$164,961 Principal Investigator, *Designing Curriculum to Honor Tribal Legacies in the Study of Lewis and Clark: An Epic Journey of Healing,* National Park Service, 2010-14

$2,688,248 Participating faculty (role: develop college access marketing campaign to recruit underrepresented students, specifically American Indians and Alaska Natives), *Biotechnology Training Program* (Dr. Raymond Reeves, Principal Investigator), competitive renewal grant submitted to the National Institutes of Health (NIH), addresses this need by providing interdisciplinary graduate training in biotechnology with a major emphasis on the fundamentals and complexities of protein chemistry, 2008-13

$450,000 Participating faculty (role: project consultant to train Engineering personal in cultural protocol to develop relationships with schools serving Native students) *Fundamental Understanding of Mercury Cycling in the Profundal Zone of Lakes on the Colville Indian Reservation as a Mechanism for Recruiting American Indian High School Students to Study Environmental Engineering* (Dr. Marc Beutel, Principal Investigator) to be submitted to the National Science Foundation (NSF), 2008-2011

$131,000 Principal Investigator, *Native American Educational Achievement Gap Study in Washington*, (Co-principal investigators Dr. Susan Rae Banks-Joseph, Dr. Lali McCubbin, and Dr. Ella Inglebret), Governor's Office of Indian Affairs, 2008-09

$840,000 Principal Investigator, *Professional Development of Native Teachers*, with Northwest Indian College, US Dept. of Education, 2001-02

$9,600,000 Co-Principal Investigator (with Drs. Dawn Shinew, Tariq Akmal, Jerry Maring, Mural Oaks), *Co-TEACH*, US Dept. of Education, 1999-04

$849,783 Principal Investigator, *Oksale Native Teacher Preparation Program*, Northwest Indian College, W.K. Kellogg Foundation, 1997-2001

SELECTED EVALUATIONS AND PROFESSIONAL REPORTS

CHiXapkaid (Pavel, D. M.). (2015). *Second year external evaluation of Turtle Mt. community college Native teacher preparation program.* North Dakota: Turtle Mt. Community College.

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PROFESSIONAL CONSULTANCIES

- American Indian College Fund, 2013-15
- Foundation for Early Learning/Thrive Washington, 2013-14
- REL – Central Regional Educational Laboratory, 2012-14
- West Wind Education Policy Inc., 2012-13
- Windwalker Corporation, 2012-13
- Seattle Indian Health Board, 2011-2012
- OSPI Office of Indian Education Since Time Immemorial: Tribal Sovereignty in Washington State Curriculum Development, 2010
- Washington State University Tri-Cities GEAR-UP, 2010
- Research Triangle Institute (RTI), International, 2010
- Seattle Art Museum, 2009
- Suquamish Tribe, 2009
- Save the Children, 2007
- Northwest Indian Fish Commission, 2007
- Ilisagvik College, 2005-2007
- Antioch University-Seattle, 2005-2006

- Muckleshoot Indian Nation, 2005
- Pathways to College Network, Distinguished Scholars Panel, 2001-2005
- Lumina Foundation, Invited Scholar, 2001
- Richard Nichols and Associates, 2001
- American Association for Community College Senior Scholar, 2000-2001
- Kellogg Senior Scholar Writing Circle, 2000-2001
- ORBIS, 1997-2001
- Kellogg Foundation's Cluster Evaluation Team, 1997-2001
- Westat, 1999-2000
- American Association for Community College's RCCI Assessment Team, 1997-99
- Hays/Lodge Pole School District, 1998
- Skokomish Indian Nation, 1997
- Westat, 1996-1997
- ACE's RCCI Documentation and Assessment Team, 1995-97
- Research Triangle Institute, 1994-96

BIOGRAPHICAL INFORMATION

Enrolled member of the Skokomish Nation. Born March 24, 1959. Instrumental in reviving traditional activities on the Skokomish Indian Reservation that include first food ceremonies, traditional namings, weddings, burials, winter spirit dances, oral history, and Native dance and song.

Norma Bixby
Northern Cheyenne Tribe
Education Director
P.O. Box 307
Lame Deer, MT 59043

Education:

MA, New Mexico State University, 1980

BS, Eastern Montana College, 1975

AA, Eastern Montana College, 1973

Experience:

Director, Northern Cheyenne Tribe, 1982-present

Elementary Principal, Busby School, 1980-1982

Curriculum, Busby School, 1976-1978

4th Grade Teacher, Busby School, 1976

Membership:

Member, Tribal Education Departments national Assembly, Present

Member, National Indian Education Association, 1986-present

Chair, Montana Committee on Civil Rights, 2004

Chair, Dull Knife College Board of Directors, 1985-2000

Advocacy:

Representative, Montana State House of Representatives, 2000-2008.

Member, Steering Committee, White House

Chair, Montana Advisory Council for Indian Education, 2000

Member, Community Service Commission, 1997

Member, Busby School Board, 1985

Bio – Tresha Spoon

Tresha Spoon, a proud member of the Absentee Shawnee tribe, received her Bachelor of Science in Management from the University of Science and Arts of Oklahoma. Ms. Spoon continued both her educational pursuits and career path obtaining a Master's in Business Administration from the University of Central Oklahoma, as well as a certificate of completion for the UCO Personal Finance Institute. Tresha has worked for the Absentee Shawnee Tribe since 2001 in several capacities beginning as an Assistant then moving to serve as a Child Protection/Foster Care Worker and in her current capacity as the Director of Education. Her focal interest is on educational reform through curricula advancement, legislative action, and technical planning. She has expertise in planning, budgeting, developing and managing programs, and event coordination. She has coordinated a wide range of programs and events for children and youth ranging from pre-K to high school.

As Director, Tresha has served as an advocate and support for youth and their parents when facing issues at school. She administers the Tribe's education programs which consist of: Academic (K-12), Zahn, Job Training Adult Education, Higher Education: Education Incentive Award, Graduate Scholarship, Big Jim Youth Award, and Johnson O'Malley. She has administrative oversight of the tribal youth program, Camp Nikoti, and worked to establish the current after school program offered to students at Little Axe Public Schools. The tribal youth program also provides a variety of prevention services to youth and their parents, such as a juvenile diversion program and a summer day camp.

Since 2006 Ms. Spoon has represented the Tribe on a range of Committee's and Boards such as the Oklahoma Council on Economic Education, Absentee Shawnee Development Corporation – Community Development Financial Institution, Regional Educational Laboratory Southwest Governing Board of the Southwest Educational Development Laboratory, and the Absentee Shawnee Tribe Foster Care Licensing Committee. Tresha currently serves as a parent representative on the Indian Education Title VII Parent Committee for Tecumseh Public Schools.

JAMES A. BATES, JR.

(b)(6)

(b)(6)

(b)(6)

Qualifications Summary: Strongly motivated individual with a team attitude and the capacity to provide effective leadership. I am well versed in accomplishing work objectives through strong team cooperation. I am seeking an opportunity to use my knowledge and excellent writing skills with focus on Native American people.

EDUCATION

Bachelor of Arts in Native American Studies, Oklahoma University **5/06**

Emphasis in Native American Economic Development and Policies

Major Works: Researched *"Sovereignty"* for Economic Development, completed extensive research community based study: *"What is the Effect of Gaming on American Indian Women",* Worked with Tribal Judge & Chairman to rewrite *C/A Constitution.*

Minor: Health & Sport Sciences—Certified Physical, Occupational, and Recreational Therapist Technician and Certified Coach.

Associate of Arts in Business Administration, Redlands Community College **12/00**

-Consulted with Native American Businesses regarding Economic Development.
-Certified Bookkeeper

Associate of Arts in Health, Physical Education & Recreation, Redlands Community College **5/96**

-Developed & executed skills to achieve team goals.
-Implemented wellness knowledge into Native American community.
-Consulted with Cheyenne/Arapaho Substance Abuse Program implementing Recreational Therapy.

EXPERIENCE

C-A Tribes of Oklahoma **1/06-5/06**
-Administrative Assistant
-Publication "Bear Butte Forum"

Paradise Landscape, Owner **8/03-11/05**
-Landscape Services, Lawn & Garden Maintenance, Tree Trimming & Removal

Office of Wetlands, Oceans, & Watersheds, Wetlands Division, U.S. Environmental Protection Agency *Washington, D.C.* **6/03-8/03**

-Evaluated and participated in Cultural knowledge exchange, developed customer and mentor relationships, and contributed to networking capabilities of the Agency.
-Worked directly with federal agency officials and Congressional Offices on National Wetlands.
-Organized cultural event with 150 attendees.
-Completed Environmental Intern requirements, including a course in "Public Policy Dilemmas: The Environment."
-Enhanced personal professionalism in conjunction with Washington Center Institute.

-Engage in communication with numerous EPA partners, such as states, regions, local governments, and Tribal Governments, to further the ıcy goals of wetland conservation and restorc .
-Develop components of American Wetlands outreach materials, including facı sheets.
-Responded directly to incoming calls and mail from the public and government officials on natural resources issues.
-Publication "Three in the Bay"

Red River Smoke Shop, Devol, OK **Manager** **7/94-1/95**

-Processed payroll/Data Entry
-Produced personal schedules
-Recorded & Archived Inventory/Secured Stock & Surplus
-Cashier/Stocker/Security

Cheyenne/Arapaho Smoke Shops **Manager** **8/88-1/94**

-Managed (4) Locations
-Supervised Office
-Produced Budget Tracking Reports
-Performed Payroll & Data Entry
-Facilitated Transfers of Financial Assets

WELLNESS ACTIVITIES

Alcott Middle School, Norman, OK (7th Grade Boy's Basketball) **11/02-1/03**
-Metro Champions

Coached Women's Fast pitch Softball **Summer02**
-Runner-up Oklahoma Indian Women's State

Redlands Community College, Lettered Basketball **Fall 95**

Western Oklahoma State College, Lettered Basketball **"83-84"**

Indian Men's Fastpitch Softball
-National Champ 1992
-State Champ 1992 & 1993
-State Runners-up 1991, 1994 & 2000

Indian Men's Basketball
-National Runners-up 1986
-State Runners-up 1988

SKILLS

- Knowledge of Federal process.
-Knowledge of Tribal Governments, Indian Law & Policies
- Completed Environmental Intern. Including a course *Public Policy Dilemmas: The Environment*
-Advanced Computer Skills; Word, Word Perfect, Database, Spreadsheet, PowerPoint.
-Experienced Research & Writing
-*Phenomenology is preferred Methology used when conducting Research.*
-Proven interpersonal and negotiating skill, excellent in dealing with staff and management to achieve a desired objective.
-Grant Writer

References available upon request

Dr. Wayne Johnson, Secretary of Education and Training
Muscogee (Creek) Nation

Dept. of Education and Training
Creek Nation Complex
Education and Training Building
Hwy 75 & Loop 56
P.O. Box 580
Okmulgee, OK 74447
(918) 732-7727 | Fax: (918) 732-7728

The Department of Education and Training provides support and direction to the management of comprehensive educational programs which results in quality educational opportunities for Muscogee (Creek) people from early childhood through college. To help better serve the students, we are partnered with several local and surrounding universities and colleges.

The Department of Education and Training consists of the following programs: Employment and Training, Eufaula Dormitory, Head Start, Higher Education, Higher Education Scholarship Foundation, Johnson O'Malley, MCN Literacy Program, Mvskoke Language Program, Reintegration and TERO.

Meet the Staff

Mark Williams

Technical Advisor

Mark Williams provides expertise to the Center on Innovation in career and technical education and is part of CIL's team managing the professional network of ***Indistar*** users in IndistarConnect; he also provides expertise on educational technology for the center.

Mark is the vice president for institutional advancement at CIL's partner organization, the **Academic Development Institute**, where he is responsible for working with state and district partners to provide research, training, and tools for leadership and supervision of rapid district and school improvement.

(b)(6)

Mark Williams

A former high school teacher, Mark served as the Illinois state director for career and technical education from 2005 to 2012, during which time he received several awards for his contribution to career and technical education (CTE) and exercised national leadership in organizations dedicated to CTE and the promotion of college and career readiness. For Illinois, he oversaw the policy and programs relating to secondary CTE, as well as alignment of K–12 career awareness, exploration, and development. He has worked extensively with Illinois's Department of Commerce and Economic Opportunity and the Illinois Business Roundtable , including the Illinois Innovation Talent Initiative that linked high school students with industry scientists, engineers, and experts in real world projects. He was also one of the three original designers of the Illinois Pathways Initiative, which partners business and industry with the world of public education to enhance the educational experiences of young Illinoisans.

Mark holds a bachelor's degree in behavioral science from the University of Chicago, and a master's degree from the Pontifical University of St. Thomas in Rome, Italy.

When not managing the constant activity and continual crises of a family of eight children and five grandchildren, Mark enjoys reading, the history of WWII aviation, flying model aircraft, and keeping his 1986 Porsche in drivable condition. He and his wife Cilla host a monthly charity classic car "Cruise Ins" for the Optimist Club of Delavan, Illinois.

ATTACHMENT B

Letters Of Support

The following are Letters Of Support and Partnership Information are included in this Appendix:

The TEDNA NYCP Project Goal is to increase College and Career Readiness for Grade 6-9 participating Indian students through improved academic readiness, informed career planning (e.g., based on interests), and building the capacity of the Tribal Education Departments to maintain this College and Career Readiness culture.

ACT®

National Office
500 ACT Drive
PO Box 168
Iowa City, IA 52243-0168

319.337.1000
www.act.org

June 26, 2015

Quinton Roman Nose, Executive Director
Tribal Education Departments National Assembly
P.O. Box 18000
Boulder, CO 80308

Dear Executive Director Roman Nose:

I am pleased to be writing you on behalf of ACT to support the application of the Tribal Education Departments National Assembly (TEDNA) proposal for the 2015 Indian Demonstration Grant Competition for the Native Youth Community Partners program.

ACT is the nation's leading College and Career Readiness assessment. At ACT, a mission-driven nonprofit organization, our insights unlock student potential and create solutions that build toward education and workplace success. We understand and care about the urgent need to improve college and career readiness. With more than 50 years of data and research bolstering our efforts, ACT delivers solutions no other organization can. Serving more than 10 million people along the Kindergarten through Career continuum, we provide support for the major decisions that parents and students make about education and career readiness and success.

TEDNA will use data from ACT assessments to support and evaluate the program proposed for middle school students in Montana and Oklahoma. The resources available to TEDNA include ACT Aspire, an online assessment for Grades 3-10; ACT Engage, an instrument that measures academic behaviors and soft skills for middle school students, and ACT Profile, an online college and planning resource designed to help students in grades 7-12 explore educational and career options that align with their interests, abilities and workplace values. Additionally TEDNA will have comparative data from the annual graduating class of each state for students who took the ACT college entrance examination. Those data for the classes of 2012, 2013, and 2014 are cited in the application, and show the clear need for educational resources for those students to be college ready.

ACT's staff who will be coordinating with this proposal will be led by Associate Vice President for the Office for the Advancement of Underserved Learners, Juan Garcia, and Senior Account Executive Judy Trice of Client Relations. Additional ACT staff from appropriate divisions, including ACT Research, will provide assistance as needed throughout the length of this program.

On behalf of ACT, we look forward to working with TEDNA and the communities you serve with this program.

Best Regards,

(b)(6)
[redacted]

Jim Larimore
Chief Officer for the Advancement of Underserved Learners

To Whom It May Concern:

The Student Preparation Team of the Oklahoma State Regents for Higher Education provides free college and career readiness professional development for K-12 educators, parents, students and other groups with the goal of college readiness for all Oklahoma students. In 2014 the Student Preparation Team began offering college readiness retreats for Indian Education Coordinators, Tribal Education Directors and others involved with K-12 Indian Education. Our future plans are to continue providing these Indian Education Retreats with the goal of building a statewide network of Indian Educators, who are knowledgeable of available resources provided by the Oklahoma State Regents, to enhance college readiness in their communities.

Matt Higdon
Assistant Director for Student Preparation, Oklahoma State Regents for Higher Education

// Native American Rights Fund

1506 Broadway, Boulder, Colorado 80302-6296
Ph. (303) 447-8760 • Fax (303) 443-7776
www.narf.org

June 28, 2015

To whom it may concern,

The Native American Rights Fund ("NARF") has long supported the Tribal Education Departments National Assembly ("TEDNA"). NARF is a national non-profit that provides legal services to many tribes and individual Native Americans across the country on an array of issues, including education. NARF is happy to support TEDNA's Native Youth Community Projects ("NYCP") Grant application.

Tribal education codes are essential to tribal sovereignty over education, and can be of particular importance to ensuring students are college and career ready. NARF has unique experience in developing and reviewing tribal education codes, and will support TEDNA and the NYCP Grant participants in doing just that. This grant can result in building the capacity for tribal education departments that participate in this project by providing them the ability to greater influence their children and Native education service opportunities. This is a viable opportunity to close the achievement gaps of Native students.

NARF fully supports this grant and will work with TEDNA to see it through.

Regards,

Matthew Campbell

Read **Right**

Empowering the mind

June 20, 2015

To whom it may concern,

Read Right Systems has long supported the Tribal Education Departments National Assembly ("TEDNA"). Having worked closely with Quinton Roman Nose since shortly after TEDNA's founding I care deeply about fulfilling TEDNA's mission.

Over the last fifteen years Dee Tadlock, Read Right's inventor and Read Right Systems' founder and President has implemented Read Right training programs for tutors, tutor trainers and primary core curriculum teachers, most drawn from tribal communities, to implement this unique methodology in fourteen tribal communities nationwide.

We are quite familiar with Native student needs, opportunities and learning environments and we want to do what ever we might to empower them. Read Right Systems is pleased and honored to fully support TEDNA's Native Youth Community Projects ("NYCP") Grant application.

Best regards,

(b)(6) [redacted]

Tom Brown
CEO / CFO
tomb@readright.com
(b)(6) [redacted]

www.readright.com

(360) 427-9440
(360) 427-0177 Fax

Read Right Systems
310 West Birch Street
Shelton, WA 98584

adi
ingenuity and service since 1984

June 28, 2015

Quinton Roman Nose, Executive Director
Tribal Education Departments national Assembly
P.O. Box 18000
Boulder, CO 80308

Dear Quinton:

It is with great pleasure that Academic Development Institute (ADI) is writing a Letter our Support for your application to the United States Office of Indian Education for the Tribal Education Department National Assembly (TEDNA) Native Youth Community Partners (NYCP) Project.

As you know, Academic Development Institute (ADI) works with families, schools, and communities so that all children may become self-directed learners, avid readers, and responsible citizens, respecting themselves and those around them. We see your TEDNA NYCP project for Indian students aligning very well with our activities. ADI's vision is filled with distinct school communities reflecting the hopes and dreams of the people intimately attached to them. To this image of the school as a community, ADI is devoted. When the school functions as a community, its constituents (students, parents, teachers, staff) associate with one another and share common values about the education of children. At the root, members of the school community assume responsibility for one another. Those children become our children, and parents are not external agents, but full partners in the education of their children and of each other's children. Teachers and staff supporting Indian students are not isolated practitioners of pedagogy, but professionals integrated into the web of community and buoyed by common purpose.

Academic Development Institute (ADI) also looks forward to working with the team to further nurture and build professional development around "Personal Competencies". As a framework, personal competencies will engage students, staff, and communities in pursuit of learning, and from these patterns fruitful behavior emerge. The behaviors take the form of habit, the habits of learning. They become fluid, almost automatic, as new learning challenges present them-selves. We envision the tribal community becoming absorbed by the learning process, immersed in it, flowing.

As we have continued to discuss, also available to the partners in this Tribal Education Department National Assembly (TEDNA) Native Youth Community Partners (NYCP) Project are the Indicators in Action produced by the Academic Development Institute. Based primarily on the ADI's research syntheses, Indicators in Action provides a vivid expression of indicators in effective practice. The Indicators in Action School Community Course is one of three in the Indicators in Action series: Instruction, Leadership, and School Community. School Community includes five modules—Curriculum of the Home, Shared Leadership and Goals and Roles, The Compact, Homework and Studying and Reading at Home, A Welcoming Place and a Connected Community. Through Indicators in Action, we'll be your partner in how to plan, implement, and sustain great practice in leadership, instruction, and school communities.

Sincerely

(b)(6)

Mark Williams
Vice President for Institutional Advancement
Academic Development Institute

STEP Roundtable in Santa Fe, NM 09-08-2013

TEDNA's Mission is to:

- Assemble and represent collectively indigenous sovereign nations' departments of education;
- Respect and honor each nation's distinct spiritual, cultural, linguistic, and economic identities;
- Foster effective relationships with other governmental and educational agencies, organizations, and entities;
- Facilitate communication and cultivate consensus amongst members by, among other things, providing current, accurate, and pertinent information to members;
- Support and encourage each member nation's right to define and reach its own education goals for its students, families, and communities wherever they may be located.

Who We Are

Join Us

TEDNA is a membership organization for the Education Departments of American Indian and Alaska Native Tribes. The founding of TEDNA has been supported by the Native American Rights Fund and the U.S. Department of Education's Office of Indian Education.

Contact Us

Phone: (405)295-5691
Email: QRomannose@tedna.org
Web: http://www.TEDNA.org/

TRIBAL EDUCATION DEPARTMENTS NATIONAL ASSEMBLY (TEDNA)
P.O. Box 18000
Boulder, CO 80308

TEDNA
www.tedna.org
Sovereignty Supporting Students

TRIBAL EDUCATION DEPARTMENTS NATIONAL ASSEMBLY (TEDNA)

Native American Video Village: A One-Stop Resource

Introduction to Tribal Education

Massive Open Online Course (MOOC)

Vision: The Teaching Wigwam.

"The chief and the sweat lodge are enclosed in a circle, a turtle symbolic of the island continent of North America. He holds his medicine bag and makes an offering of tobacco so that his vision will be fulfilled. The eagles see and protect the vision. The pipe, thunderbird, drum, and four colours reflect its foundations and intentions—peace, wisdom, and harmony with the earth and all people. The children stand on firm ground between the pines. They study the books that will assist in the way forward" (Miller, 1996)

Special thanks to artist Jesse Agawa (Anishinaabe Ojibway) for granting us permission to use his painting Shingwauk's Vision.

Learn More:
TEDNA MOOC http://www.tedna.org

Native American Video Village: A One-Stop Resource

The Native American Video Village will serve as a resource tool for Native leaders, elders, families, youth, children, & institutions supporting Native learning, culture, health, employment and well-being.

"The Native American Video Village will build a worldwide network connecting every tribal student with their respective tribe(s) to learn not only about their tribe, but also to take advantage of their services."

TEDNA with LEAs, TED's, & Tribes will:

1. Develop a model for using technology to more fully enable each Native student to build, maintain and enhance their academic status.
2. Connect Native students with their specific tribal TED to learn about their tribal history, language, or government.
3. Facilitate contact between Native students and their Tribe's higher education/scholarship office for college preparedness, scholarship programs, and other services like online tutoring, mentoring, or career counseling.

Learn more about TEDNA You Tube Channel
http://www.tedna.org

TEDNA YouTube Channel provides a collection of videos from Native American leaders and topics of importance.

Native American Video Village Project for Tribes

TEDNA intends to pursue, create, and support a Native American Video Village Project for Native tribes, Tribal Education Departments (TED's), and Native learners of all ages and circumstances.

- ✓ Enhance communication between Native students and their Tribe's college scholarship office throughout middle and high school years
- ✓ Receive information about college readiness, preparedness, & success.
- ✓ Bureau of Indian Affairs scholarship programs.
- ✓ Other services which may include online mentoring, tutoring, and counseling.

Read Right®
Empowering the mind

A Truly Innovative **Reading Solution**

Native Peoples

Effective Reading Programs for Native American Students

READ RIGHT SYSTEMS – SERVICES OVERVIEW

Dr. Dee Tadlock and Read Right Systems have extensive experience working with Native American project sites. Call and request contact information for the Muckleshoot, Kalispel, and Spokane Nations in Washington State; the Yup'ik Nation in Alaska; the Cheyenne in South Dakota; the Sioux in North Dakota; and more.

Read Right offers a Primary Core Curriculum for Grades K-3, as well as a Reading Intervention Program for elementary- and secondary-level struggling readers. To date, we have trained staff members at more than 500 non-Tribal and Tribal project sites. In 2010 we introduced a new service—Online Tutoring—that makes it possible for Tribal programs to provide cost-effective, small-group tutoring in reading to children, teens, and adults everywhere that Internet and webcam technology are available.

Gold-standard research (Education Northwest, Scott et al., 2010) verifies that Read Right is effective for RTI. Focusing on comprehension, that research has been reviewed and rated highly by the National Center on Response to Intervention (RTI).

Effective With Kalispel Students, Grades 3-12:

- On average, students gained 2.5 years in comprehension in *one school year*
- Kalispel Special Education students gained 3.2 years in comprehension during the same period

Effective With Sioux Students:

- On average, Standing Rock students Grades 7-12 gained 2.9 years in comprehension in *one school year*
- Cheyenne Eagle Butte students Grades 4-11 gained 1.8 years in comprehension during the same period

Effective at Havermale High School, Grades 9-12:

- On average, Spokane and Kalispel students gained 3.4 years in comprehension in *one school year*
- Over three years, the percentage of Havermale Tribal students passing the state assessment in reading grew from 22% to 60%

Read Right Primary Core Curriculum

When children learn how to do any process, for example, how to walk, how to talk, how to ride a bike, etc. they gradually build a neural network to guide the particular process they are learning. Reading is no exception: When children learn how to read, they build a network in their brains to guide the reading process. The Read Right Primary Core Curriculum is designed to ensure that every student builds a reading network that operates efficiently and effectively from the beginning.

Read Right Reading Intervention Program

Reading problems are caused when students construct a faulty neural network to guide the process of reading. Grounded in Piaget's theory of interactive constructivism, the Read Right Reading Intervention Program relies on the plasticity of the brain to remodel the neural circuitry that is operating inappropriately. Even the most challenged students are quickly transformed from poor readers to excellent readers—in a matter of months, not years!

Benefits for the Student

- Provides quick, significant, and permanent improvement
- Transforms poor readers to excellent readers
- Builds positive self-esteem
- Restores hope and confidence; expands student potential
- Establishes a solid foundation for academic success

Benefits for the School

- Diminishes staff frustration by providing an effective tool to help students succeed
- Generates noticeable results for children and teens, delighting family members
- Helps meet Federal guidelines and close the achievement gaps.

Successful Projects Have Been Established in:

Tribal schools

BIE schools

Public schools on Native American Reservations

Urban schools serving significant numbers of Native American students

Rural schools serving significant numbers of Native American students

"When we first brought Read Right in, a little over 1300 books were checked out from the High School library. Last year, a little over 2300 books were checked out. This year 4,660 Books have been checked out!"

Clyde Naasz, North Dakota

with retrievable Wise Ways® research and practice briefs. The system is supplemented by online video demonstrations of 144 indicators of effective practice in Indicators in Action™ and Indicators Now™. Indistar® has been adopted by 25 State Education Agencies and the Bureau of Indian Education and is in place in more than 7,000 schools. ADI is also a partner with the American Institutes for Research to manage the Illinois Center for School Improvement, under contract with the Illinois State Board of Education.

"It has been an excellent tool in helping to keep me focused on instruction and the quality of instruction that is being delivered." Middle School Principal

"The magic of Indistar® lies not in its technology but in the assistance it provides for a district or school team to efficiently drive improvement. Indistar is a tool for people working in teams."

State Education Agencies

ADI is a partner in three, federally-funded technical assistance centers that serve regional centers and State Education Agencies (SEAs). The Center on Innovations in Learning (Temple University) assists SEAs in stimulating, selecting, implementing, and taking to scale innovations in learning. The Center on School Turnaround (WestEd) provides resources, tools, and training for SEAs in their management of school turnaround initiatives. The Building State Capacity and Productivity (BSCP) Center (Edvance Research) focuses on performance management and systems of support in SEAs. IndiSEA™, an adaptation of Indistar and provided through the BSCP Center, guides SEA leadership in managing performance in their systems of recognition, accountability, and support. ADI is a partner in a federally-funded State and Tribal Education Program with the State of Idaho and the Nez Perce tribe.

Star Hitchers®: In 2012, ADI formed Star Hitchers, LLC to expand ADI's training and consulting efforts. Star Hitchers® especially supports Indistar® states, districts, and schools and school improvement coaches.

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Academic Development Institute

ingenuity and service since 1984

Assisting families, schools, and communities with children's academic and personal development

research

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about us

Mission and Vision

When ADI was founded as a non-profit organization in 1984, its mission was to “assist families, schools, and communities with children’s academic and personal development.” ADI began this work with a summer program for middle school students and parent education programs for schools. Since that time, ADI has expanded its reach to include every level of the education system.

Students

ADI administers Liftoff, a youth development program to “elevate the trajectory of success” for youth in Logan County, Illinois. Liftoff is funded by the Robert and Joan Woods Foundation.

Families

Through a grant from the Illinois State Board of Education, ADI’s Lincoln Parents’ Center serves at-risk families of children from birth to age three through a home visit program (Parents as Teachers) and related activities.

School Communities

ADI’s School Community Network provides programs and resources related to the community of the school, with a special emphasis on engagement of families in support of their children’s learning. Since 1991, ADI has published the international, peer-reviewed *School Community Journal*, a journal of research and field reports. The schoolcommunitynetwork.org website features resources for parents and for schools.

The School Community Index is a web-based process by which a school yields a substantial report based on surveys of parents, teachers, and (in high schools) students. The web-based Family Engagement Tool guides a school team (including parents) in assessing the school’s parent programs, leading to an action plan and a planning and implementation tool. Solid Foundation is a comprehensive program with structured agendas and bountiful resources for a School Community Council to build a strong school community focused on student learning.

Under contract with the Illinois State Board of Education, ADI provides the illinoisparents.org website, an e-newsletter of family-school resources, and related activities.

ADI’s Metro East Parent Connection serves families and schools in the East St. Louis area, including 21st Century programs and parent education.

“SCN is great for schools that want to more intentionally focus on engaging parents to positively implact student success.”

Teachers

ADI’s Action Guide for Instructional Planning and Collegial Learning, and the related training, prepares teacher instructional teams to integrate Common Core concepts and effective practices into lesson plans emphasizing differentiation, classroom management, and multiple modes of delivery.

Principals

ADI’s Principal Leadership Academy is an intensive, year-long program leading to certification as Rapid Improvement Leaders. The program

includes training, web-based planning and implementation systems, and mentors assigned to assist each principal. This program was first developed for the Bureau of Indian Education, with which ADI maintains an ongoing relationship.

“I really enjoyed the time to share with other principals. I have a better understanding of what it is I need to do in my role as principal. This reaffirmed the need to make sure all focus is on students.”

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ADI’s Indistar® is a sophisticated, web-based system that guides district and school Leadership Teams in their improvement planning and implementation. Indistar® is based on indicators of effective practice, aligned

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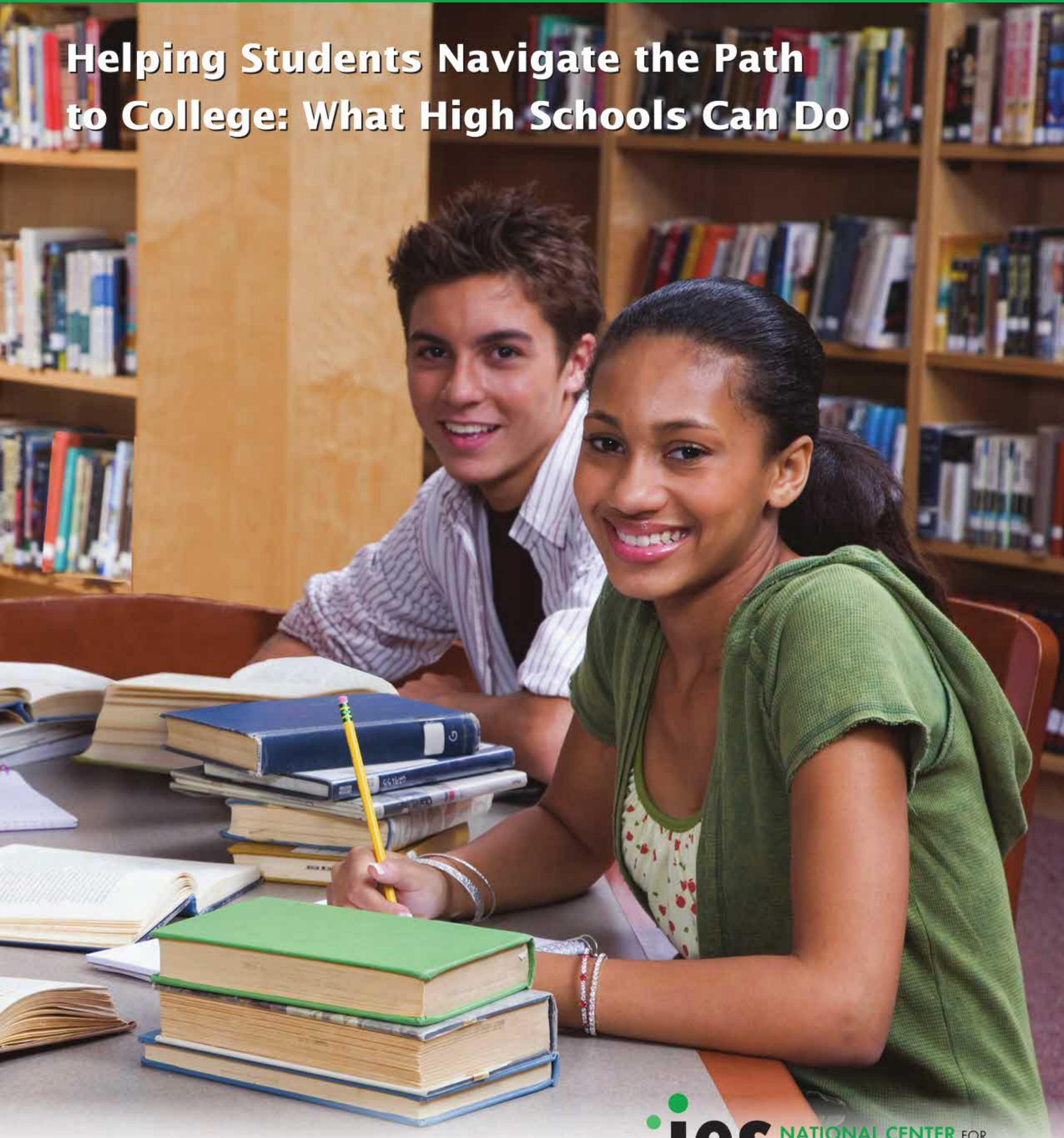
Helping Students Navigate the Path to College: What High Schools Can Do



NCEE 2009-4066
U.S. DEPARTMENT OF EDUCATION

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Institute of Education Sciences

The Institute of Education Sciences (IES) publishes practice guides in education to bring the best available evidence and expertise to bear on the types of challenges that cannot currently be addressed by single interventions or programs. Authors of practice guides seldom conduct the types of systematic literature searches that are the backbone of a meta-analysis, although they take advantage of such work when it is already published. Instead, authors use their expertise to identify the most important research with respect to their recommendations and conduct a search of recent publications to ensure that the research supporting the recommendations is up-to-date.

Unique to IES-sponsored practice guides is that they are subjected to rigorous external peer review through the same office that is responsible for independent review of other IES publications. A critical task for peer reviewers of a practice guide is to determine whether the evidence cited in support of particular recommendations is up-to-date and that studies of similar or better quality that point in a different direction have not been ignored. Because practice guides depend on the expertise of their authors and their group decisionmaking, the content of a practice guide is not and should not be viewed as a set of recommendations that in every case depends on and flows inevitably from scientific research.

The goal of this practice guide is to formulate specific and coherent evidence-based recommendations for use by educators addressing the challenge of increasing access to higher education. The guide provides practical, clear information on critical topics related to what schools can do to help students navigate the path to college and is based on the best available evidence as judged by the panel. Recommendations presented in this guide should not be construed to imply that no further research is warranted on the effectiveness of particular strategies for increasing access to postsecondary education.

Helping Students Navigate the Path to College: What High Schools Can Do

September 2009

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NCEE 2009-4066
U.S. DEPARTMENT OF EDUCATION

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Disclaimer

The opinions and positions expressed in this practice guide are those of the authors and do not necessarily represent the opinions and positions of the Institute of Education Sciences or the U.S. Department of Education. This practice guide should be reviewed and applied according to the specific needs of the educators and education agencies using it, and with full realization that it represents the judgments of the review panel regarding what constitutes sensible practice, based on the research that was available at the time of publication. This practice guide should be used as a tool to assist in decisionmaking rather than as a "cookbook." Any references within the document to specific education products are illustrative and do not imply endorsement of these products to the exclusion of other products that are not referenced.

U.S. Department of Education
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Secretary

Institute of Education Sciences
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Director

National Center for Education Evaluation and Regional Assistance
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September 2009

Tierney, W. G., Bailey, T., Constantine, J., Finkelstein, N., & Hurd, N. F. (2009). *Helping students navigate the path to college: What high schools can do: A practice guide* (NCEE #2009-4066). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education. Retrieved from http://ies.ed.gov/ncee/wwc/publications/practiceguides/.

What Works Clearinghouse Practice Guide citations begin with the panel chair, followed by the names of the panelists listed in alphabetical order.

This report is available on the IES website at http://ies.ed.gov/ncee and http://ies.ed.gov/ncee/wwc/publications/practiceguides/.

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Helping Students Navigate the Path to College: What High Schools Can Do

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Introduction

Access to higher education remains a challenge for many students who face barriers to college entry. Low-income students and students who are potentially the first in their family to attend college have lower college enrollment rates than other students.[1] Although academic preparation accounts for some of these differences, the disparities in college-going rates persist for these groups of students even when controlling for academic preparation.[2] College access outcomes have important economic and social consequences: college graduates earn more than those with a high school degree and are more active in their communities.[3]

This guide is intended to help schools and districts develop practices to increase access to higher education. It can be useful for individuals who work in schools and districts in planning and executing strategies to improve preparation for, and access to, higher education. A panel of experts in college access programs and strategies and in research methods developed the recommendations in this guide. The guide contains specific steps on how to implement the recommendations that are targeted at school- and district-level administrators, teachers, counselors, and related education staff. The guide also indicates the level of research evidence demonstrating that each recommended practice is effective.

As with all What Works Clearinghouse (WWC) practice guide panels, this panel developed recommendations by consulting research evidence. The evidence that the panel considered in developing this document ranges from experimental evaluations of college access programs to expert analyses of college access practices. In looking for effective practices, the panel paid particular attention to high-quality experimental and quasi-experimental studies, such as those meeting the criteria of the WWC,[4] and to patterns of practices that are replicated across programs.

The research base for this guide was identified through a comprehensive search for studies evaluating college access interventions and practices. An initial search for this type of research conducted in the United States in the past 20 years (1988–2008) yielded more than 500 studies. Of these, 99 studies examined college access programs or related practices for high school students and were eligible for further review because the study design included a comparison group. These studies were reviewed by the WWC to determine whether they were consistent with WWC standards. Of the 99 studies, 16 studies met WWC standards with or without reservations. These 16 studies of 10 different college access programs represent the strongest evidence of the effectiveness of college access programs.

To indicate the strength of evidence supporting each recommendation, the panel relied on the WWC standards for determining levels of evidence, described below and in Table 1. It is important for the reader to remember that the level of evidence rating is not a judgment by the panel on how effective each of these recommended practices will be when implemented, nor are they a judgment of what prior research has to say about their effectiveness. The level of evidence ratings reflect the panel's judgment of the quality of the existing literature to support a causal claim that when these practices have been implemented in the past, positive effects on student academic outcomes were observed.

1. Choy (2002); National Center for Education Statistics (2008).

2. Ellwood and Kane (2000); Smith et al. (1997).

3. Baum and Ma (2007); Kane and Rouse (1995); National Conference on Citizenship (2006); U.S. Census Bureau (2002).

4. http://www.whatworks.ed.gov/

Table 1. Institute of Education Sciences levels of evidence for practice guides

Strong	In general, characterization of the evidence for a recommendation as strong requires both studies with high internal validity (i.e., studies whose designs can support causal conclusions) and studies with high external validity (i.e., studies that in total include enough of the range of participants and settings on which the recommendation is focused to support the conclusion that the results can be generalized to those participants and settings). Strong evidence for this practice guide is operationalized as: • A systematic review of research that generally meets WWC standards (see http://ies.ed.gov/ncee/wwc/) and supports the effectiveness of a program, practice, or approach with no contradictory evidence of similar quality; OR • Several well-designed, randomized controlled trials or well-designed quasi-experiments that generally meet WWC standards and support the effectiveness of a program, practice, or approach, with no contradictory evidence of similar quality; OR • One large, well-designed, randomized controlled, multisite trial that meets WWC standards and supports the effectiveness of a program, practice, or approach, with no contradictory evidence of similar quality; OR • For assessments, evidence of reliability and validity that meets the Standards for Educational and Psychological Testing.[a]
Moderate	In general, characterization of the evidence for a recommendation as moderate requires studies with high internal validity but moderate external validity or studies with high external validity but moderate internal validity. In other words, moderate evidence is derived from studies that support strong causal conclusions but generalization is uncertain or studies that support the generality of a relationship but the causality is uncertain. Moderate evidence for this practice guide is operationalized as: • Experiments or quasi-experiments generally meeting WWC standards and supporting the effectiveness of a program, practice, or approach with small sample sizes and/or other conditions of implementation or analysis that limit generalizability and no contrary evidence; OR • Comparison group studies that do not demonstrate equivalence of groups at pretest and, therefore, do not meet WWC standards but that (1) consistently show enhanced outcomes for participants experiencing a particular program, practice, or approach and (2) have no major flaws related to internal validity other than lack of demonstrated equivalence at pretest (e.g., only one teacher or one class per condition, unequal amounts of instructional time, or highly biased outcome measures); OR • Correlational research with strong statistical controls for selection bias and for discerning influence of endogenous factors and no contrary evidence; OR • For assessments, evidence of reliability that meets the Standards for Educational and Psychological Testing[b] but with evidence of validity from samples not adequately representative of the population on which the recommendation is focused.
Low	In general, characterization of the evidence for a recommendation as low means that the recommendation is based on expert opinion derived from strong findings or theories in related areas and/or expert opinion buttressed by direct evidence that does not rise to the moderate or strong level. Low evidence is operationalized as evidence not meeting the standards for the moderate or strong level.

a. American Educational Research Association, American Psychological Association, and National Council on Measurement in Education (1999).

b. Ibid.

They do not reflect judgments of the relative strength of these positive effects or the relative importance of the individual recommendations.

A *strong* rating refers to consistent and generalizable evidence that an intervention strategy or program improves outcomes.[5]

A *moderate* rating refers either to evidence from studies that allow strong causal conclusions but cannot be generalized with assurance to the population on which a recommendation is focused (perhaps because the findings have not been widely replicated) or to evidence from studies that are generalizable but have more causal ambiguity than that offered by experimental designs (e.g., statistical models of correlational data or group comparison designs for which equivalence of the groups at pretest is uncertain).

A *low* rating refers to evidence from studies that do not meet the standards for moderate or strong evidence and/or expert opinion based on reasonable extrapolations from research and theory.

A low level of evidence rating does not indicate that the recommendation is any less important than other recommendations with a strong or moderate rating. Rather, it suggests that the panel cannot point to a body of research that demonstrates its effect on student achievement. In some cases, this simply means that the recommended practices would be difficult to study in a rigorous, experimental fashion; in other cases, it means that researchers have not yet studied this practice, or that there is weak or conflicting evidence of effectiveness.[6]

Three of the five recommendations made by the panel received a low evidence rating. For example, recommendation 2, which describes the use of assessments to measure college readiness, was determined to have a low level of evidence (see Table 2). This means that there are few existing studies designed to test, in a discrete and valid manner, the causal relation between the utilization of assessment measures and college going. Nevertheless, the authors of this practice guide, based on expert judgment and knowledge of practice, consider the use of assessment to be a critical component of a well-implemented strategic plan for increasing access to college. Hence, although the level of evidence rating is low, the panel has included assessment as one of the five recommended practices.

Citations in the text refer to studies of programs that have implemented various practices. Not all of these programs contribute to the level of evidence rating: although some of these programs have had rigorous evaluations of their impacts, others have not. Furthermore, some of the programs that have been rigorously evaluated have found positive effects on college access outcomes; others have not.

5. Following WWC guidelines, improved outcomes are indicated by either a positive, statistically significant effect or a positive, substantively important effect size (i.e., greater than 0.25). See the WWC guidelines at http://ies.ed.gov/ncee/wwc/pdf/wwc_version1_standards.pdf.

6. For more information, see the WWC Frequently Asked Questions page for practice guides, http://ies.ed.gov/ncee/wwc/references/idocviewer/doc.aspx?docid=15&tocid=3.

The What Works Clearinghouse standards and their relevance to this guide

In terms of the levels of evidence indicated in Table 1, the panel relied on WWC evidence standards to assess the quality of evidence supporting educational programs and practices. The WWC addresses evidence for the causal validity of instructional programs and practices according to WWC standards. Information about these standards is available at http://ies.ed.gov/ncee/wwc/references/idocviewer/doc.aspx?docid=19&tocid=1.[7] The technical quality of each study is rated and placed into one of four categories:

- *Meets Evidence Standards* for randomized controlled trials and regression discontinuity studies that provide the strongest evidence of causal validity.
- *Meets Evidence Standards with Reservations* for all quasi-experimental studies with no design flaws and randomized controlled trials that have problems with randomization, attrition, or disruption.
- *Does Not Meet Evidence Standards* for studies that do not provide strong evidence of causal validity.
- *Potentially Meets Standards* for studies that require additional information to determine whether they meet evidence standards; typically refers to quasi-experimental studies that do not provide sufficient information to assess baseline equivalence.

Following the recommendations and suggestions for carrying out the recommendations, Appendix D presents more information on the research evidence that supports each recommendation.

We appreciate the efforts of Jeffrey Max, Christina Clark Tuttle, Kristin Hallgren, Moira McCullough, and Sarah Wissel, Mathematica Policy Research staff members who participated in the panel meetings, characterized the research findings, and drafted the guide. We also appreciate the help of the many WWC reviewers who contributed their time and expertise to the review process. We also thank Scott Cody, Shannon Monahan, and Neil Seftor for helpful feedback and reviews of earlier versions of this guide.

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Nicole Farmer Hurd

7. Reviews of studies for this practice guide applied version 1.0 WWC standards. Interested readers can access these standards at http://ies.ed.gov/ncee/wwc/references/iDocViewer/Doc.aspx?docId=20&tocId=1.

Helping Students Navigate the Path to College: What High Schools Can Do

Overview

A well-educated workforce is critical for maintaining the economic competitiveness of the United States. The strength of our economy hinges on the ability of our education system to meet the demand for highly educated workers. As a result, there are persistent calls to improve access to higher education and to encourage students and adults to continue their education beyond high school.[8] However, reaching college remains a challenge for many low-income and potentially first-generation students who (a) are not academically prepared or (b) lack knowledge about how to apply to, and pay for, college.[9] College enrollment rates for these students continue to lag behind those of their peers despite overall improvements in college attendance.

The challenge of improving the college-going rate can be traced to two key difficulties. First, students must be academically prepared for college by 12th grade. The opportunities to academically prepare for college narrow as students progress through high school. If students do not start taking college preparation courses in the 9th grade, they will be less likely to enroll in college. In addition, students who are not reading or doing math at grade level will not be prepared for college-level work.[10] The problem is made more difficult if students and their families are unaware that their performance is inadequate. Schools need to ensure that students are on the path to college beginning in 9th grade, or earlier, and that they stay on that path throughout high school.

Second, many students do not take the necessary steps during high school to prepare for and enter college because they are not aware of these steps or because they lack the guidance or support needed to complete them.[11] In addition to the academic obstacles discussed earlier, students need to complete a number of discrete steps in high school to enroll in college, such as taking college entrance exams, searching for colleges, applying for financial aid, submitting college applications, and selecting a college. In their senior year, students have to decide where to go; how to apply; and, most important, how to pay for college. These issues should be considered, optimally, in the earlier years of high school, but in the senior year students must make decisions. Students may lack adequate advice, particularly if no one in their immediate families has completed a two- or four-year degree. Students and their families need advice from knowledgeable school staff if they are to successfully navigate the college application processes.

As a result, a large part of the obligation for enabling students to gain the academic, social, and cultural skills to gain entrance to college falls upon our teachers, counselors, and school administrators. High schools play a critical role in preparing students academically for college and assisting students through the steps to college entry. They also can take steps to influence students' access to college-going peer groups and to encourage high academic expectations of students. The college-going culture of a high school, or lack thereof, becomes important in college-going decisions. When students, teachers, and administrators openly talk about preparing for and going to college, the climate in the school can move toward college access.

8. Pathways to College Network (2004).

9. Avery and Kane (2004); Ikenberry and Hartle (1998); National Center for Education Statistics (2005); Roderick et al. (2008); U.S. General Accounting Office (1990).

10. Adelman (1999); Cabrera and La Nasa (2001); Wimberly and Noeth (2005).

11. Ikenberry and Hartle (1998); U.S. General Accounting Office (1990).

Table 2. Recommendations and corresponding levels of evidence

Recommendation	Level of evidence
Academic preparation	
1. Offer courses and curricula that prepare students for college-level work, and ensure that students understand what constitutes a college-ready curriculum by 9th grade	**Low**
2. Utilize assessment measures throughout high school so that students are aware of how prepared they are for college, and assist them in overcoming deficiencies as they are identified	**Low**
College aspirations and expectations	
3. Surround students with adults and peers who build and support their college-going aspirations	**Low**
Steps for college entry	
4. Engage and assist students in completing critical steps for college entry	**Moderate**
5. Increase families' financial awareness, and help students apply for financial aid	**Moderate**

Source: Authors' compilation based on analysis described in text.

Scope of the practice guide

The purpose of this guide is to recommend steps that educators, administrators, and policymakers can take, beginning in the 9th grade, to increase access to higher education. The guide targets high schools and school districts and focuses on effective practices that prepare students academically for college, assist them in completing the steps to college entry, and improve their likelihood of enrolling in college. The recommendations address the discrete steps that students need to take throughout high school and describe how high schools can use mentors and peers to support students' college aspirations. The panel recognizes that simply providing students with information is insufficient, and, throughout, the guide recommends that high schools offer hands-on assistance and guidance in preparing students for college.

The recommended steps derive from the characteristics of college access programs, school reforms, and policy interventions that have shown promise in increasing access to college, particularly for low-income and first-generation students. The panel focused on programs and practices with evidence of their impact on academic preparation for college (e.g., high school completion and course taking), completion of the steps for college entry (e.g., submitting college and financial aid applications), or college enrollment and attendance. Although the panel recognizes the importance of college persistence for low-income and first-generation students who are less likely than other students to complete a degree,[12] the focus of the guide and the recommended practices is on how high schools and districts can improve access to higher education. However, evidence on whether the recommended practices impact college persistence is described when relevant.

The panel believes that every student should leave high school with the skills required to attend a two- or four-year institution. To that end, high schools must provide students with information to consider postsecondary training and to assess their readiness. Also, all high school curricula should, at a minimum, prepare students to begin taking college-level courses at a two-year institution without the need for remediation in any subject area upon entering that institution. For students who wish to enroll in a four-year institution, their high school curriculum should include options that prepare students for the more rigorous academic requirements of four-year institutions. However, we do not believe that all students should be required to complete a high school curriculum that prepares students for a four year college. Principal and district administrators should work to ensure that at all high schools, curricula alternatives exist appropriate for students who aspire to any level of postsecondary training.

We believe every high school should have a college access strategy for students that incorporates our recommendations. Such a strategy would address four areas: curriculum, assessment, aspirations, and hands-on assistance with college entry activities. Some recommendations will include best practices for all students; for example, recommendation 2 talks about identifying assessments of college readiness and making students aware of their proficiency on these assessments, and recommendation 3 discusses building college aspirations. These recommendations are useful for students still exploring their interest in attending college as well as providing feedback to students who have already determined that they are interested in attending college. Other recommendations will be targeted at students who have decided they want to attend a two- or four-year institution after

12. National Center for Education Statistics (2004); Nunez and Cuccaro-Alamin (1998).

high school. For example, recommendation 4 focus on assisting students in their search for identifying specific colleges, taking college entrance exams, and completing college applications. The recommendations reinforce that high schools need to be prepared to inform and support students to obtain their highest aspirations.

Although this guide does not directly address steps that college and universities can take to promote access, it does highlight the important role these institutions should play and may be of benefit to higher education administrators. Much of the evidence in the practice guide is based on programs that were implemented by or in partnership with postsecondary institutions. That said, the panel notes that other entities influence access to college and may benefit from the recommendations in this guide as well. For example, parents and families have an essential role to play in helping their children prepare for college. Elementary and middle schools also can help set students on the path to college. In addition, community organizations often play a critical role in providing the academic or social supports to assist students in preparing for college. Finally, states and the federal government impact college access through financial aid policies. Although the guide does not target these stakeholders, they may find the recommendations relevant.

Although the guide addresses ways to improve students' and parents' knowledge of financial aid (see recommendation 5), it does not include recommendations on how to provide financial assistance to students. The panel focused on steps that high schools and districts could take to improve college access, and federal and state financial aid policy is beyond the scope of the guide.

Throughout the guide, the panel uses the term *college* to refer broadly to all types of two- and four-year institutions. When necessary, the terms *two-year college* and *four-year college* are used to distinguish between these two types of institutions.

Status of the research

Overall, the panel believes that the existing research on college access services and programs is not at a level to provide conclusive evidence of best practices. Studies of promoting college access generally look at specific programs that provide a bundle of services, and not at individual services, making it difficult to isolate a specific service's contribution to college readiness and enrollment. In addition, the panel encountered varying impacts across college access programs with ostensibly similar services. The reasons for the varying impacts are difficult to determine. In some cases, the programs are serving different populations of students. For example, some may target students who already have some interest in attending college, whereas others may focus on students who are unlikely to attend college due to difficulty with achievement, attendance, or behavior in high school. In addition, college access programs have been studied and tested in the real world, where a range of college access services is provided. Thus, research on college access programs is generally designed to ask whether a particular college access program is more effective than other services being provided. It is not designed to ask whether college access services are effective compared to offering no services at all.

In offering these recommendations, the panel is confident that it is important to offer college access services to ensure that all students who want to attend college are prepared to do so. The guide includes the set of recommendations that we believe are a priority to implement. However, the nature of the research is such that we do not have a strong evidence base for recommending specific practices over others; thus, the recommendations are all supported by low or moderate levels of evidence as described in the introduction.

Summary of the recommendations

This practice guide includes five recommendations for how high schools and school districts can improve access to higher education. The first two recommendations focus on preparing students academically for college by offering a college preparatory curriculum and assessing whether students are building the knowledge and skills needed for college. These two recommendations reflect the panel's belief that students are best served when schools develop a *culture of achievement* and a *culture of evidence*. The next recommendation describes how high schools can build and sustain college aspirations by surrounding students with adults and peers who support these aspirations. Recommendations 4 and 5 explain how high schools can assist students in completing the critical steps to college entry, including college entrance exams and college and financial aid applications.

Recommendation 1 advises schools and districts to ensure that every student has the ability to be ready to take college-level courses by beginning preparation in the 9th grade. Students and their families need to understand what the requirements are for college, and what is needed to apply to certain postsecondary institutions. In particular, the panel recommends that students complete Algebra I by the end of 9th grade, and by graduation, complete coursework in core academic and elective areas that make them minimally proficient to attend community colleges without the need for remediation. Such actions can strengthen the culture of achievement within a school.

If schools and districts are to monitor student progress toward being academically prepared for college, then they need to have adequate assessment measures in place for all students at every grade level. Recommendation 2 promotes a culture of evidence by encouraging schools and districts to use assessments that determine whether students are on track academically for college and points out the importance of early warning systems for students who are deficient in particular courses. The panel emphasizes here that assessment without action is virtually meaningless. Once deficiencies have been found, students and their families need to understand them, and they need to be assisted in overcoming them.

Recommendation 3 describes how high schools can help students build college-going networks by linking students to college-educated mentors, encouraging students to form academically oriented peer groups, and allowing students to explore a variety of careers. These activities can build a college-going identity and support students' aspirations.

Recommendations 4 and 5 address steps schools can take to assist students in completing the discrete tasks for college entry. The panel considers it imperative that thinking about applying to college and how to pay for college need to begin before the 12th grade. Financial literacy about college affordability is an example of an activity that could occur as early as 9th grade. At the same time, some activities are specific to the senior year. This guide offers recommendations for the actions that will enhance the ability of students to complete the college application process successfully.

The panel appreciates that schools and districts may face challenges and roadblocks in implementing all of the recommendations. Many of these recommendations could require additional staff or other resources that are not easily accessible to schools. Implementing these strategies may require changing mind-sets and promoting new behaviors, which may not happen immediately. Schools also have different personnel responsible for different activities, and the panel has avoided specifying one individual who must undertake a particular activity and instead has focused on key actions that schools need to take to improve college access. To address these concerns, each recommendation includes a series of roadblocks and suggested approaches that offer innovative solutions to some issues that schools may encounter when implementing the recommendations.

The panel believes that the greatest success in increasing student access to college will be achieved by a coordinated effort in implementing these recommendations. The suggested practices need to be developed systematically, monitored, evaluated, and modified, if necessary. The guide is not meant as a resource that school principals can use to implement an individual recommendation and be successful. Although an individual recommendation may succeed in improving college-going rates, the panel discourages schools and districts from employing a piecemeal approach. Students will be best served by a strategic plan for implementing all five recommendations in their schools.

Checklist for carrying out the recommendations

Recommendation 1. Offer courses and curricula that prepare students for college-level work, and ensure that students understand what constitutes a college-ready curriculum by 9th grade

☐ Implement a curriculum that prepares all students for college and includes opportunities for college-level work for advanced students.

☐ Ensure that students understand what constitutes a college-ready curriculum.

☐ Develop a four-year course trajectory with each 9th grader that leads to fulfilling a college-ready curriculum.

Recommendation 2. Utilize assessment measures throughout high school so that students are aware of how prepared they are for college, and assist them in overcoming deficiencies as they are identified

☐ Identify existing assessments, standards, and data available to provide an estimate of college readiness.

☐ Utilize performance data to identify and inform students about their academic proficiency and college readiness.

☐ Create an individualized plan for students who are not on track.

Recommendation 3. Surround students with adults and peers who build and support their college-going aspirations

☐ Provide mentoring for students by recent high school graduates who enrolled in college or other college-educated adults.

☐ Facilitate student relationships with peers who plan to attend college through a structured program of extracurricular activities.

☐ Provide hands-on opportunities for students to explore different careers, and assist them in aligning postsecondary plans with their career aspirations.

Recommendation 4. Engage and assist students in completing critical steps for college entry

☐ Ensure students prepare for, and take, the appropriate college entrance or admissions exam early.

☐ Assist students in their college search.

☐ Coordinate college visits.

☐ Assist students in completing college applications.

Recommendation 5. Increase families' financial awareness, and help students apply for financial aid

☐ Organize workshops for parents and students to inform them prior to 12th grade about college affordability, scholarship and aid sources, and financial aid processes.

☐ Help students and parents complete financial aid forms prior to eligibility deadlines.

Recommendation 1. Offer courses and curricula that prepare students for college-level work, and ensure that students understand what constitutes a college-ready curriculum by 9th grade

The courses students take in high school have important consequences for their academic preparation and their ability to access college.[13] Yet, low-income and first-generation students are less likely than other students to complete a rigorous high school curriculum that prepares them for college, either because it is not offered by their high school or they are not encouraged to enroll in it.[14] It is critical that high schools enable students to enroll in courses that will prepare them academically for college-level work. This process has two steps: *offering* the relevant courses and *advising* students to take them.

High schools should offer, as a default, a college-*ready* curriculum that includes specific courses in key subjects. The panel defines a college-ready curriculum as one that, when completed, will enable students to enroll in college without need for remediation. In addition, all schools should offer Advanced Placement (AP) or other college-*level* opportunities. By 9th grade, students need to understand the courses that comprise this curricular track and their importance for accessing college. A four-year course trajectory can then help students plan and complete the coursework needed to prepare for college.

Level of evidence: Low

The panel judged the level of evidence for this recommendation to be *low*. None of the studies examining the impact of offering a college-ready curriculum met WWC standards. The lack of evidence partly reflects the challenge of rigorously evaluating the impact of high school course taking—students who choose to enroll in rigorous courses can differ in important ways from students who do not.

The evidence for taking a college-ready curriculum consists of six studies that potentially met standards.[15] Two of the studies provide mixed evidence on the effect of a rigorous high school curriculum,[16] and four studies show positive effects of AP courses.[17] The evidence for academic advising is stronger, with six relevant programs that had studies meeting standards, but the impact of academic advising could not be isolated from other program components.[18] Despite the limited evidence for this recommendation, the panel believes that offering the courses needed to prepare for college and informing students about those courses are critical steps for improving college access.

13. Adelman (1999, 2006).

14. Adelman (1999); Alexander (2002); Martinez and Klopott (2003); Wimberly and Noeth (2005).

15. Allensworth et al. (2008); Attewell and Domina (2008); Dougherty, Mellor, and Jian (2006); Hargrove, Godin, and Dodd (2008); Jeong (2009); Keng and Dodd (2008).

16. Allensworth et al. (2008); Attewell and Domina (2008).

17. Dougherty, Mellor, and Jian (2006); Hargrove, Godin, and Dodd (2008); Jeong (2009); Keng and Dodd (2008).

18. EXCEL—Bergin, Cooks, and Bergin (2007); Talent Search—Constantine et al. (2006); Middle College High School—Dynarski et al. (1998); Sponsor-a-Scholar—Johnson (1998); Upward Bound—Myers et al. (2004); Quantum Opportunity Program (QOP)—Schirm, Stuart, and McKie (2006).

Brief summary of evidence to support the recommendation

Two studies that potentially meet standards examined the effect of high school course taking.[19] One study found that taking a more intense curriculum in high school has positive effects on high school performance and the likelihood of entering and completing college.[20] Curricular intensity is based on the number of credits in core subject areas, the highest math course taken, the number of AP courses completed, and enrollment in remedial math or English. However, a study of a school district that ended remedial classes and required college prep coursework for all students found no effect on high school dropout rates or the likelihood of entering college.[21]

The panel identified four studies that potentially meet standards that examine the effect of AP course taking.[22] These studies report positive effects of enrolling in an AP course or taking the AP course and exam on high school completion, college entry, and college degree completion.

Five correlational studies provide additional evidence on the relationship between course taking and achievement.[23] Two of these studies found a positive correlation between a rigorous high school curriculum and completion of a college degree,[24] and three studies reported a positive effect on high school achievement.[25] However, a positive correlation does not mean that the coursework caused higher achievement.

Six programs with studies meeting standards provide evidence on academic advising.[26] Most of these programs offered individual assistance to students in selecting the classes needed to prepare for college. Sponsor-a-Scholar also worked with school staff to ensure that students enrolled in a college preparatory curriculum, and EXCEL made completion of a college preparatory curriculum a requirement for receiving a scholarship. Two of these programs[27] had a positive impact on college enrollment, whereas the other four programs[28] had no impact.

How to carry out this recommendation

1. Implement a curriculum that prepares all students for college and includes opportunities for college-level work for advanced students.

The panel recommends that high schools and districts offer the courses and curricula needed to prepare students for college. This includes providing courses that are required for entry into a two- or four-year college and providing rigorous academic coursework that prepares students for the demands of college. Table 3 presents examples of college preparatory course requirements. Although there are slight differences in the requirements, all include four years of English, at least three years of mathematics, two to three years of science and social studies, and one to two years of a foreign

19. Allensworth et al. (2008); Attewell and Domina (2008).

20. Attewell and Domina (2008).

21. Allensworth et al. (2008).

22. Dougherty, Mellor, and Jian (2006); Hargrove, Godin, and Dodd (2008); Jeong (2009); Keng and Dodd (2008).

23. Adelman (1999, 2006); Gamoran and Hannigan (2000); Lee and Ready (2009); Lee, Croninger, and Smith (1997).

24. Adelman (1999, 2006).

25. Gamoran and Hannigan (2000); Lee and Ready (2009); Lee, Croninger, and Smith (1997).

26. EXCEL—Bergin, Cooks, and Bergin (2007); Talent Search—Constantine et al. (2006); Middle College High School—Dynarski et al. (1998); Sponsor-a-Scholar—Johnson (1998); Upward Bound—Myers et al. (2004); QOP—Schirm, Stuart, and McKie (2006).

27. Talent Search and Sponsor-a-Scholar.

28. EXCEL, Middle College High School, QOP, and Upward Bound.

Table 3. Examples of college preparatory course requirements

Program/ Requirements	English	Mathematics	Science	Social Studies	Additional Courses
High Schools That Work	Four years	Four years: Algebra I, geometry, Algebra II, and a fourth higher-level mathematics course	At least three years: biology, chemistry, physics or applied physics, or anatomy/ physiology	Three or more years	At least one computer course
State Scholars Initiative (SSI)	Four years	Three years: Algebra I, Algebra II, and geometry	Three years: biology, chemistry, and physics	Three and a half years: U.S. and world history, geography, economics, and government	Two years of a language other than English
California's A–G Requirements	Four years	Three years: Elementary and advanced algebra and geometry	Two years: biology, chemistry, physics, or physical science	Two years: world history, cultures, and geography; U.S. history	Two years of a language other than English; one year of visual and performing arts; one year of college preparatory elective
Indiana "Core 40" Curriculum	Four years	Three years: Algebra I, Algebra II, and geometry	Three years: biology, chemistry or physics, and one additional course	Three years: U.S. history, U.S. government, economics, world history or geography	Three years of world language, fine arts, and/or physical education
Academic Competitiveness Grant Requirements	Four years	Three years: including Algebra I and a higher-level class	Three years: biology, chemistry, and physics	Three years	One year of a language other than English
KnowHow2Go[a]	Four years	Three or more years: including Algebra I and a higher-level class	Three or more years	Three or more years	Possibly foreign language, arts, computer science

a. *Source:* www.knowhow2go.org

language. These requirements also specify that students should take algebra and other higher-level mathematics courses during high school. The panel recommends that at a minimum, all students should pass Algebra I by the end of their 9th-grade year. Currently, 21 states and the District of Columbia have implemented a college-ready curriculum for all students as a graduation requirement;[29] districts in other states could consider making a college-ready track the default curriculum.

The panel recommends that schools enhance their college-ready curriculum with opportunities for prepared students to take college or college-level courses. This includes dual enrollment arrangements that allow students to take college courses for high school and college credit; AP courses; and the International Baccalaureate (IB) program, which also can prepare students for the academic demands of college and facilitate some students' admission to more selective schools.[30] A variety of resources are available to help schools implement these types of programs, including state and federal AP incentive programs or e-learning options

29. Achieve, Inc. (2009).

30. Dougherty, Mellor, and Jian (2006); McCauley (2007); Perkins et al. (2004).

and partnerships with postsecondary institutions to offer dual enrollment to qualified students.[31]

2. Ensure that students understand what constitutes a college-ready curriculum.

There is substantial evidence that students do not understand the curricular requirements for college entry and success, even those for community colleges.[32] High schools should clearly communicate with students and families to ensure that they understand the courses needed for college (and that students are on track to complete them, as discussed further in recommendation 2), *before they enter high school*. For example, students should know that in many states, they need to take the following types of classes beginning in 9th grade:

- Geometry, algebra, trigonometry, advanced math
- American history, world history, civics
- Earth/physical science, biology, chemistry, physics

This communication can come in the form of a mailing (see Exhibit 1)[33] or in general advice provided by school or college access program staff by the end of 8th grade.[34] In later years, students still need one-on-one attention—from a counselor, a teacher, an administrator, or program staff—to facilitate and encourage rigorous course taking.[35] A high school might schedule drop-in hours for students to receive academic advising and assistance with selecting courses from a teacher, counselor, or other staff person.[36]

Schools and districts also should provide continuing professional development or counseling for counselors, registrars, teachers, and other staff on college prep course requirements, so that they can serve as an informative resource for students.[37]

3. Develop a four-year course trajectory with each 9th grader that leads to fulfilling a college-ready curriculum.

Beginning in 9th grade, high school counselors should work individually with each student to ensure that he or she has a plan to complete the courses during high school. This could be structured as an individualized education, learning, or graduation plan that guides a student's curricular choices throughout high school (see Exhibit 2).[38] Even though several states require that schools develop a plan that defines the courses a student will take in high school,[39] high schools should make sure that these plans are living documents that are referred to by teachers and counselors and provided to parents.

Providing students with information about the courses that are needed to prepare for college is only the first step. High schools need to ensure that students take the college-ready curriculum throughout high school. The panel recommends that high schools first develop a general four-year

31. Hargrove, Godin, and Dodd (2008); Jackson (2009); Jeong (2009); Karp et al. (2007); Keng and Dodd (2008); Klopfenstein and Thomas (2009); Quint, Thompson, and Bald (2008); Siskin and Weinstein (2008).

32. Perna et al. (2008); Plank and Jordan (2001).

33. Dounay (2008).

34. Constantine et al. (2006); Maxfield et al. (2003); Quigley (2003).

35. Bergin, Cooks, and Bergin (2007); Gandara (2002, 2004); Gandara et al. (1998); Johnson (1998).

36. Calahan et al. (2004).

37. Austin Independent School District, Office of Program Evaluation (2002); Perna et al. (2008).

38. Christie and Zinth (2008); Robinson, Stempel, and McCree (2005).

39. Education Commission of the States. *Additional High School Graduation Requirements and Options* (http://mb2.ecs.org/reports/Report.aspx?id=740, accessed June 2, 2009).

Exhibit 1. Example of course requirement mailing

Winter 2009-PUB 8

8th Grade Students

Selecting the right courses is a life-defining decision.

1. You need to go to college

It's economics—the more you learn, the more you earn.

Professional degrees (medical doctors, lawyers, CPAs, engineers, pharmacists)	**$116,514**
College graduates (bachelor's degree)	**$56,788**
High school graduates	**$31,071**

Jobs in the 21st century will require education and training beyond high school. The fastest growing occupations require postsecondary education (U.S. Bureau of Labor Statistics).

2. You must take the right courses

SD CollegePrep Model Program of Study

Grade	Math	English	Social Science	Laboratory Science
8	Algebra I	English		
9	Geometry	English	American History	Physical or Earth Science
10	Algebra II	English	World History	Biology
11	Trigonometry	English	American Government	Chemistry
12	Advanced Senior Math	English	Economics, Geography, Psychology, etc.	Physics

* The sequence of these courses may vary from school to school.

3. You can afford it

The average cost for a full-time student in South Dakota's public universities:

Tuition and fees	**$6,327**
Room and board on campus	**$4,766**
Total	**$11,093**

Many South Dakota students can get financial aid, federal grants and/or loans to meet the costs of their education, in addition to numerous scholarships and awards available at every postsecondary educational institution in the state.

A public university freshman with maximum need for financial assistance can receive as much as:

$ 4,731	Federal Pell Grant
$ 1,000	Federal supplemental opportunity grant (highest public university)
$ 3,000	Federal Perkins Loan (highest public university)
$ 3,500	Federal Stafford Loan (maximum allowed)
$ 2,000	Unsubsidized Federal Stafford Loan
$ 2,100	Work Study (university average)
$16,331	Total funding available from federal sources

Awards could vary based on the student's financial need, availability of Federal Student Aid funds, and university financial aid awarding policies.

Planning the road to college must start early. The earlier you start, the better prepared you will be to go to college.

- Take the right courses, including four years of math in high school. Start by completing algebra in the 8th grade if you can.
- Set up a good study area.
- Get organized for school.
- Consider goals for college and life.
- Look at possible careers and determine what type of college to attend and what classes to take.
- Get involved in extracurricular activities while in high school.
- Talk with college students and graduates about college.
- Discuss your college goals with your school counselor.
- Start saving for college now.
- Start investigating scholarships and financial aid options.

See www.sdcollegeprep.info for more information.

www.sdcollegeprep.info • info@sdcollegeprep.com

The Board of Regents published 11,000 copies of this flyer at a cost of $ .13 per copy. SDBOR is an equal employment opportunity employer.

Source: South Dakota Board of Regents website, www.sdbor.edu.

Exhibit 2: Example of a personalized learning plan

NAME____ Student ID #________________

Meeting Dates: Grade: 9 ______________ 10 ______________ 11______________12______________

GRADUATION REQUIREMENTS: **220 Credits**

English **4 years** (40 credits)

	1st Sem Grade		2nd Sem Grade
English I		English I	
English 2		English 2	
English 3		English 3	
English 4		English 4	

Social Studies **3 Years** (30 Credits)

	1st Sem Grade		2nd Sem Grade
WH		WH	
US Hist		US Hist	
US Gov't/ Econ		Econ/US Gov't	

Mathematics **2 Years** (20 credits) –
Must include HS Algebra

	1st Sem Grade		2nd Sem Grade
Algebra ______		Algebra ______	
Math ________		Math ________	

Science **2 Years** (20 Credits) –
Physical **and** Life/Biological

	1st Sem Grade		2nd Sem Grade
Phy Sci		Phy Sci	
Life		Life	

Physical Education **2 Years** (20 Credits)

	1st Sem Grade		2nd Sem Grade
PE 9/Sport		PE 9/Sport	
PE/Sport		PE/Sport	

Fine Arts **OR** Foreign Language **1 Year** (10 Credits)

	1st Sem Grade		2nd Sem Grade
FA/FL		FA/FL	

Health (5 Credits) and
College & Career Planning (5 Credits)

Health		CCP	

Electives (75 Credits)

	1st Sem Grade		2nd Sem Grade		1st Sem Grade		2nd Sem Grade

Additional Graduation Requirement:

CAHSEE Passed: ELA ______Math_____

Remember that High School Graduation Requirements are not the same as the College Admission Requirements (A–G). Know the difference! Visit the school website for detailed college admissions information.

HIGH SCHOOL CEEB CODE xxxxxx

A–G Requirements (NO "D" grades Accepted)
CALIFORNIA STATE UNIVERSITY (CSU) www.csumentor.edu
UNIVERSITY OF CALIFORNIA (UC) www.ucop.edu/pathways

Subject Area	Years Required
A. Social Science	Two years. One year US History or ½ year US History and ½ year of US Government, and one year of World History.
B. English	Four years of college-preparatory English composition and literature.
C. Mathematics Algebra 1 Algebra 2/Trigonometry Geometry Advanced Math	Three years required. Four years recommended.
D. Laboratory Science	Two years required. Three years recommended. (Two of the following: Biology, Chemistry, Physics, or other approved college preparatory science.)
E. Language other than English	Two years required. Three years recommended—at least two years of the same language.
F. Visual Performing Arts	One year is required.
G. College Preparatory Elective	One year in most of the above A–F areas, or approved elective.
NCAA (www.ncaaclearinghouse.org) 16 Core Courses beginning with the class of 2008	

Career Goal:____

____

Plans after High School:

____

____

Student Signature ________________________________

Parent Signature ________________________________

(continued)

Exhibit 2: Example of a personalized learning plan *(continued)*

"Four-Year Plan" Worksheet

Student Name____ **Date**______________________

Career Goal (check one) ❑Four–Year University ❑Community College (Transfer Program) ❑Trade/Tech/Art School ❑Other

GRADE 9 (Student must take 6 classes—60 credits total for year)		GRADE 10 (Student must take 6 classes—60 credits total for year)	
Fall Semester	**Spring Semester**	**Fall Semester**	**Spring Semester**
English I	English I	English II	English II
Math	Math	Math	Math
Science	Science	Science	Science
PE	PE	World History	World History
Reading or Elective	Health	PE	PE
Elective	Elective	Elective	Elective
Elective (Optional)	Elective (Optional)	Elective (Optional)	Elective (Optional)
GRADE 11 (Student must take 5 classes—50 credits total for year)		**GRADE 12 (Student must take 5 classes—50 credits total for year)**	
Fall Semester	**Spring Semester**	**Fall Semester**	**Spring Semester**
English III	English III	English IV	English IV
U.S. History	U.S. History	American Gov't	Economics
Elective	Elective	Elective	Elective
Elective	Elective	Elective	Elective
Elective	Elective	Elective	Elective
Elective (optional)	Elective (optional)	Elective (optional)	Elective (optional)
Elective (optional)	Elective (optional)	Elective (optional)	Elective (optional)

Four-Year University Bound Student
(Example) Meeting UC / CSU A–G Course Sequence

Career Goal (check one) ❑Four–Year University ❑Community College (Transfer Program)

GRADE 9 (Student must take 6 classes—60 credits total for year)		GRADE 10 (Student must take 6 classes—60 credits total for year)	
Fall Semester	**Spring Semester**	**Fall Semester**	**Spring Semester**
English I or English I Acc	English I or English I Acc	English II or English II Acc	English II or English II Acc
Algebra I or higher math	Algebra I or higher math	Geometry or higher math	Geometry or higher math
Biology	Biology	Chemistry or Conceptual Physics	Chemistry or Conceptual Physics
Health	College Career Planning	World History or AP European	World History or AP European
PE Activities 9 or Sport	PE Activities 9 or Sport	PE or Sport	PE or Sport
World Language 1	World Language 1	World Language II	World Language II
Elective (Optional)	Elective (Optional)	Elective (Optional)	Elective (Optional)
GRADE 11 (Student must take 5 classes—50 credits total for year)		**GRADE 12 (Student must take 5 classes—50 credits total for year)**	
Fall Semester	**Spring Semester**	**Fall Semester**	**Spring Semester**
English III or AP Language	English III or AP Language	English IV or AP Literature	English IV or AP Literature
U.S. History or AP US History	U.S. History or AP US History	American Gov't or AP Gov't	Economics or AP Economics
Algebra II/Trig or higher math	Algebra II/trig or higher math	*Advanced college prep math*	*Advanced college prep math*
Advanced College Prep Science	*Advanced College Prep Science*	Visual Performing Art	Visual Performing Art
World Language III	*World Language III*	Elective	Elective
Elective (optional)	Elective (optional)	Elective (optional)	Elective (optional)

Source: Adapted from materials created by a National College Advising Corps program site.

course trajectory that defines the potential timing and sequence of college-ready classes for students. This may include options for the core courses students should take each year in order to prepare for college. This approach offers a curriculum path that students can use to inform their specific selection of classes each year of high school.

Potential roadblocks and solutions

Roadblock 1.1. *Teachers may not be trained to teach advanced courses.*

Suggested Approach. Not all teachers must be trained to teach advanced courses, but teachers should have access to professional development opportunities that help them sharpen their skills so that the curriculum they teach is as rigorous and engaging as possible. Helping teachers understand how their classes fit with a college preparatory sequence begins with asking them to participate in the planning of the articulation of the curriculum. Schools also can reach out to institutions of higher education to implement dual enrollment opportunities or have community college professors teach courses on campus.

Roadblock 1.2. *Enrolling students who are not prepared for the academic rigor in college prep or college-level classes is seen as counterproductive.*

Suggested Approach. It is critical that all students have the *option* to participate in these types of classes and are supported in their efforts. Developing a culture of achievement among the faculty is a key strategy to supporting students in their efforts so that the teachers are interested in and willing to help students who are challenging themselves. Schools can provide academic support for students who take the most rigorous course load available by setting up peer-tutoring opportunities so that stronger students can work with those students who may be struggling in honors, AP, or IB classes. Teachers can be encouraged to set up this sort of peer system among students in their individual classes.

Roadblock 1.3. *Our high school has limited information on entering 9th-grade students to assist them in planning their high school coursework.*

Suggested Approach. High schools need academic information on incoming students to help them plan a four-year course trajectory that will prepare students for college. High schools can coordinate with middle schools to obtain transcripts, academic records, and other resources that help high school staff better understand the needs of incoming students. This information can be used to assist students in selecting appropriate high school courses and to help high schools create an appropriate four-year plan with students. High schools also can coordinate with middle schools to inform students about how their middle school performance affects the courses they will take in high school and their ability to access college.

Recommendation 2. Utilize assessment measures throughout high school so that students are aware of how prepared they are for college, and assist them in overcoming deficiencies as they are identified

Completing the courses needed to graduate from high school and meet college entry requirements does not guarantee that students have the knowledge and skills needed to succeed in college. Many high schools produce students who may pass state exit exams and meet graduation standards but still are academically unprepared for college, as evidenced by the nearly 60 percent of students who are required to take remedial courses as a condition of enrollment.[40] High schools must assess student progress to identify, notify, and assist students who are not adequately prepared as early as possible in their academic career.

Level of evidence: Low

The panel determined that the level of evidence supporting this recommendation is *low*. In this case, the rating is not necessarily a result of limited or poor research: the ability to implement related data and assessment systems is a fairly recent development. Advances in both capabilities and resources devoted to state longitudinal datasets have been promising, but these data do not yet exist for many jurisdictions. As they become more prevalent, the panel expects that research on their use also will expand.

Although four programs with studies meeting standards included practices related to data use and additional instruction to assist students, these practices were neither isolated in the evaluation nor necessarily a major component of the program.[41] Studies of two additional programs[42] that potentially meet standards suggest that the use of data to identify and notify students of their academic progress during high school had an impact on college outcomes. There is also suggestive evidence that district- or statewide use of assessments associated with college readiness (such as PLAN and ACT[43]) is associated with improved college outcomes, but this correlation does not mean that requiring students to take those tests caused improved access to college.[44]

Brief summary of evidence to support the recommendation

Two programs with studies that potentially met standards assess students when they are high school juniors to determine their readiness for college-level work. California's Early Assessment Program (EAP) uses assessment results to inform students about whether they need additional preparation to become college ready and includes supplemental programming for students who do not meet expectations.[45] The College

40. Bailey (2009).

41. Talent Search—Constantine et al. (2006); Sponsor-a-Scholar—Johnson (1998); QOP—Schirm, Stuart, and McKie (2006); Upward Bound—Seftor, Mamun, and Schirm (2009).

42. College Now—Crook (1990); California Early Assessment Program (EAP)—Howell, Kurlaender, and Grodsky (2009).

43. Although ACT was originally an acronym for American College Testing, the official name is now ACT. PLAN is the name of an assessment administered by ACT.

44. ACT (2008a, 2008b, 2009a, 2009b).

45. California State University (2005); Howell, Kurlaender, and Grodsky (2009).

Now program in New York City uses assessment data to determine whether students are eligible for dual enrollment courses or need developmental classes to prepare for college-level coursework.[46] Studies of both programs found that they reduced the need for remediation in college, and College Now increased the number of college credits that students earned.

Two additional programs with studies that potentially met standards include elements of academic support. Project GRAD analyzed data to understand and track students' progress toward meeting graduation requirements. GEAR UP sites provide individualized academic support for students with academic problems and those who do not perform well on standardized assessments.[47] Studies of both programs examined middle school outcomes and did not report high school or college outcomes.[48]

Four college access programs that provided academic assistance to improve students' academic proficiency had studies that met WWC standards.[49] Talent Search, Sponsor-a-Scholar, and the Quantum Opportunity Program (QOP) offered fairly low-intensity academic assistance through tutoring services or homework help after school. Although Talent Search and Sponsor-a-Scholar had a positive impact on college enrollment, academic services formed a minor component of all three. Upward Bound offered additional academic coursework throughout the school year and during a six-week summer session but did not have an impact on college enrollment or degree attainment.

Correlational studies that examined ACT's College Readiness System provide suggestive evidence on identifying and notifying students who are not college ready.[50] The College Readiness System includes the EXPLORE and PLAN assessments in 8th and 10th grades that are precursors to the ACT (one of two national college admissions tests) and the COMputer-adapted Placement Assessment and Support Services (COMPASS), a college placement test administered by ACT. The panel also relied on other descriptive and qualitative studies.[51]

How to carry out this recommendation

1. Identify existing assessments, standards, and data available to provide an estimate of college readiness.

Assessments can play a key role in alerting students, parents, and teachers about whether students are "on track" for college matriculation when they graduate from high school. Currently, no single college-readiness assessment is commonly available or used by schools and districts (although there is progress in that direction[52]). Recognizing the limited time and resources schools have to develop a new assessment, the panel recommends that high schools consider several existing assessments that can provide an early indication of students' academic preparation for college:

- **College or community college placement exam.** Schools and districts can use whole assessments or a subset of items from existing college or community college placement exams as a diagnostic measure. Although many placement exams are school specific,

46. Crook (1990); Karp et al. (2007, 2008).

47. Standing et al. (2008).

48. Opuni (1999); Standing et al. (2008).

49. Talent Search—Constantine et al. (2006); Sponsor-a-Scholar—Johnson (1998); QOP—Schirm, Stuart, and McKie (2006); Upward Bound—Seftor, Mamun, and Schirm (2009).

50. ACT (2008a, 2008b, 2009a, 2009b).

51. Achieve, Inc. (2009); Austin Independent School District, Office of Program Evaluation (2002); Quint, Thompson, and Bald (2008).

52. See, for example, Achieve, Inc. (2009).

some common assessments can be adopted by a high school (e.g., COMPASS and ACCUPLACER, an assessment developed by the College Board and used to help determine course selection for students).

- **College admissions exams.** High schools can have students take one of the college admissions exams designed for students in early high school grades (e.g., PSAT, EXPLORE, PLAN).[53] These assessments can gauge early academic preparation in math and reading as well as reasoning and critical thinking. Later in high school, states can have all students take the college admission exams (e.g., SAT, ACT) to gauge their college readiness.

- **Statewide college and career readiness assessments.** Schools in states that already conduct a college or career assessment should take advantage of these assessments and use them as an indicator of college preparedness.[54]

- **Local assessments.** In districts, schools can use existing benchmark assessments on a regular basis to measure students' progress against standards tied to academic proficiency.[55]

In some cases, schools may be able to obtain financial support for implementing one of these assessments.[56]

The information gathered from these assessments should be combined with other indicators of academic progress to determine if students are on track for college as defined by coursework progression and academic proficiency. High schools can connect assessments in each of these areas into a cohesive set of information that can be used in guidance and planning. High schools can assess coursework progression against the college preparatory tracks described in recommendation 1. Academic proficiency information is contained in existing state assessments, and postsecondary aspirations can be assessed in a brief student survey.

To gauge whether they are successfully preparing students for college, high schools should gather information on postsecondary enrollment for past students. In some states, high schools can gather this information from a state database that tracks students from kindergarten through college. In other states, high schools and districts can track their graduates through the National Student Clearinghouse (http://www.studentclearinghouse.org), a comprehensive student-level repository of data from 3,300 postsecondary institutions attended by 92 percent of college students in the United States. Alternatively, high schools may be able to partner with local and regional postsecondary institutions to gather information on the enrollment of their graduates. The panel recommends that high schools use these data to understand the enrollment rate, persistence, and degree attainment of graduates in order to better understand the impact of current practices.

53. Achieve, Inc. (2009); Dounay (2006); Howell, Kurlaender, and Grodsky (2009). For example, Buffalo, New York, administers the PSAT to first-year high school students; Chicago, Illinois, uses the ACT's EPAS system, administering EXPLORE to its 8th and 9th graders and PLAN to its 10th and 11th graders.

54. Ten states administer college and career-readiness assessments to all students: four are state specific, as is the Early Assessment Program, and can replace placement tests; one administers the SAT; and five administer the ACT statewide (Achieve, Inc., 2009).

55. Quint, Thompson, and Bald (2008). For example, school districts in Richmond, Virginia, and Fresno, California, use benchmark assessments every nine weeks to measure students' progress against standards tied to academic proficiency.

56. For example, Florida and South Carolina provide funding to districts that want to administer the PSAT or PLAN assessment to their students.

2. Utilize performance data to identify and inform students about their academic proficiency and college readiness.

The information schools collect on academic performance and college readiness (step 1) should be used to identify students who are falling behind and to inform all students of their progress in becoming college ready. This applies to both the courses students need to be qualified for college entry and the skills they acquire in those courses to avoid remediation once they matriculate. The use of performance data should occur as early as 9th grade to ensure that students can take the necessary steps to get back on track. The panel recommends using the data in the following ways:

- **Identify students with college expectations who are performing below grade level and who are not on a college-ready track.** Schools should identify students who are not meeting grade-level standards and who are not on track for college but have college aspirations. Although state assessments can be used to identify students performing below grade level, course grades, grade point average (GPA), course completion, and college-readiness assessments can be used to identify students who are not on track for college. For example, a school can flag students who are performing below a certain GPA, or students who have not completed courses on the college preparatory track. High schools should obtain and use middle school transcripts of their incoming students to support course placement and flag entering 9th graders with academic deficiencies before those students step foot on campus.[57]

- **Inform all students about their performance and its implications for accessing college.** Discussions with students should be held at least annually about the progress they are making and the hurdles they need to overcome in becoming college ready.[58] Students and families should receive the results of the data collected by the school, possibly in the form of a data report or a letter. For example, a data report might include information on course grades, college-readiness assessment results, and high school course completion.[59] Students identified as below grade level or not on track for college should have an individual meeting with someone at the school to discuss the results and their implications for accessing college. Students who are not making progress toward completing graduation or college preparatory requirements should be notified of possible interventions that can help them get back on track (e.g., summer school, remediation programs).[60]

3. Create an individualized plan for students who are not on track.

Students who are not on track to complete a typical academic course sequence often have trouble catching up and meeting college-readiness objectives.[61] The earlier in high school a student can catch up to a standard course sequence, the greater the likelihood of meeting college entrance requirements at the time of high school graduation.

High schools should work with students who are not on track to develop a plan that will assist them in "catching up."[62] The plan should specify the steps students will take to get back on track academically and the additional instruction they will receive to support their academic proficiency. High schools, colleges, and a variety of

57. Gewertz (2009).

58. Dounay (2006).

59. Gewertz (2009).

60. Christie and Zinth (2008).

61. Wimberly and Noeth (2005).

62. Quint, Thompson, and Bald (2008); Robinson, Stempel, and McCree (2005).

student academic support programs provide a range of options for students who are behind but eager to make progress. Teachers, counselors, and college advisors can play a pivotal role in helping students make the best choices for supplemental instruction and in connecting students back into more typical instructional programs at the appropriate time. The panel encourages high schools to choose these programs carefully, paying particular attention to the "fit" between a particular student's demonstrated need and the program's intent. "Reteaching" a student with similar instructional strategies, in similar instructional settings, may not be as useful as a more customized approach to matching deficiencies with deliberate progress objectives.

Specifically, high schools and districts can collaborate with postsecondary institutions or existing college access programs to offer additional instruction during out-of-class time. One example is tutoring and homework assistance by college students, program staff, or teachers, and in a variety of formats: both in small groups and one-on-one.[63] More formally, schools can implement "recovery" programs for math courses, in which students who fail a unit are immediately required to attend after-school instruction for that unit and as an incentive for attendance may be given the opportunity to improve their grade for that unit.[64] Another option is summer programs for academic enrichment or remedial skills when necessary.[65]

An alternate strategy is additional or restructured courses to address academic deficiencies during school time. Schools can use double blocking to enable first-year students needing extra help to take "catch-up" classes for two periods each day during the first semester and then the regular academic or college prep classes in the second semester.[66]

Tutorials should be provided whenever possible to accommodate all students—on Saturdays, before school, after school, or during lunch. One potentially effective approach is to develop and publicize a matrix that shows when tutorials are available and who will be providing them. In this way, students needing additional help need not be limited to working with the teacher in whose class they are struggling.[67]

Potential roadblocks and solutions

Roadblock 2.1. *Obtaining new data on students can be expensive, schools do not have the capacity or resources to generate student-level reports, and students already take enough tests.*

Suggested Approach. It is certainly true that few schools have the capacity to implement this recommendation at the building level, but it is feasible for many districts. Consider replacing any district-level assessment that does not measure college readiness with one that does, such as the PSAT or equivalent. Alternatively, examine how well the district-level assessment already correlates with college going and success. The panel recommends taking advantage of all of the reports and/or data systems that are generated and maintained by the state.

Roadblock 2.2. *Some school staff—teachers and/or counselors—do not have the time or the training to collect or analyze data and may even view the use of data as destructive (a mechanism for criticism).*

63. Austin Independent School District, Office of Program Evaluation (2002); Calahan et al. (2004); Johnson (1998); Maxfield et al. (2003).

64. Robinson, Stempel, and McCree (2005).

65. Austin Independent School District, Office of Program Evaluation (2002); Kallison and Stader (2008); Snipes et al. (2006).

66. Kemple, Herlihy, and Smith (2005); Quint, Thompson, and Bald (2008).

67. Robinson, Stempel, and McCree (2005).

rather than as constructive (a strategy for school improvement).

Suggested Approach. The panel recommends providing technical assistance to staff in interpreting and acting on findings from student assessments. Make sure staff are aware of the data that are currently available, make them available in their classrooms or offices when possible, and model their effective use. When feasible, consider implementing common planning time or creating a "school improvement data team" so that staff can share knowledge and ideas.

Recommendation 3. Surround students with adults and peers who build and support their college-going aspirations

Although 79 percent of students express college aspirations early in high school,[68] college plans can falter if students do not take the necessary steps to prepare for and enter college.[69] By 12th grade, low-income and first-generation students are less likely than other students to expect to earn a bachelor's degree or higher.[70] High schools should build and support students' aspirations by developing social networks that encourage college attendance and assist students in preparing for college. College students and college-educated adults can serve as mentors for students, providing guidance and support throughout the college preparation process. Extracurricular activities and college access programs can encourage the formation of college-going peer groups that share an interest in pursuing college. High schools can use career exploration activities to develop students' career interests and link those interests to postsecondary plans.

Level of evidence: Low

The panel defined the level of evidence for this recommendation as *low* because of limited evidence that the recommended practices improve college enrollment rates.

Although the panel identified evidence that supports mentoring—the first step of this recommendation—there is limited evidence on the other two steps. Six programs with studies meeting or potentially meeting standards are aligned with one or more steps in this recommendation.[71] Three of these programs had a positive impact on college enrollment,[72] and three did not impact enrollment.[73] However, isolating the impact of the recommended practices is difficult because these programs included a variety of other strategies. A few correlational studies reported a relationship between having friends with college plans and college enrollment, but they do not provide evidence on the causal effect of college-going peers.[74] Despite the low evidence rating, the panel believes that linking students with college-going adults and peers is important for building aspirations and supporting college entry.

Brief summary of evidence to support the recommendation

The panel separately reviewed studies for each of the steps that make up this recommendation. Four programs had studies that met or potentially met standards and provided mentoring services.[75] Studies of Sponsor-a-Scholar, Career Beginnings, and Puente reported a positive impact

68. National Center for Education Statistics (2004).

69. Gandara (2002); Kao and Tienda (1998); Roderick et al. (2008).

70. National Center for Education Statistics (2006a); Nunez and Cuccaro-Alamin (1998).

71. Career Beginnings—Cave and Quint (1990); Sponsor-a-Scholar—Johnson (1998); Puente—Gandara (2002); Career Academies—Kemple (2004); QOP—Schirm, Stuart, and McKie (2006); Upward Bound—Seftor, Mamun, and Schirm (2009).

72. Career Beginnings—Cave and Quint (1990); Puente—Gandara (2002); Sponsor-a-Scholar—Johnson (1998).

73. Career Academies—Kemple (2004); QOP—Schirm, Stuart, and McKie (2006); Upward Bound—Seftor, Mamun, and Schirm (2009).

74. Horn and Chen (1998); Hossler, Schmit, and Vesper (1999); Sokatch (2006).

75. Career Beginnings—Cave and Quint (1990); Puente—Gandara (2002); Sponsor-a-Scholar—Johnson (1998); QOP—Schirm, Stuart, and McKie (2006).

on college enrollment,[76] whereas a study of QOP found no impact on college enrollment.[77] Mentoring in these programs consisted of a one-on-one relationship between a college-educated adult or case manager and a high school student. Mentors were expected to meet regularly with students and, in most cases, provided assistance or guidance with the college preparation process. For example, mentors in the Sponsor-a-Scholar program monitored students' academic progress and assisted them with college applications. The mentoring relationships lasted between two to four years depending on the program.

Three programs with studies that met or potentially met standards focused on the role of peers. A study of the Puente program showed a positive impact on college enrollment,[78] a study of the Career Academies program found no impact,[79] and a study of the Advancement Via Individual Determination (AVID) program did not measure college enrollment.[80] All three programs organized students into groups that facilitated academically oriented friendships. The Career Academies program was structured as small learning communities of students who take academy classes together throughout high school. The Puente program mixed high- and low-achieving Latino students in an English class for two years, and students in AVID, a program that placed promising students in college preparatory coursework, took a year-long course together that supported their coursework and emphasized a college-going identity.

The panel identified two programs with studies meeting standards that offered career exploration activities, although neither had an impact on college enrollment.[81] The Career Academies and Upward Bound programs implemented a variety of career exploration activities, including speakers from the business community, visits to employer sites, career planning assistance, career fairs, and job shadowing.[82] The Career Academies program also organized students into learning communities that focus on a career theme and provide work-based learning experiences.

How to carry out this recommendation

1. Provide mentoring for students by recent high school graduates who enrolled in college or other college-educated adults.

The panel recommends linking students to adults who can serve as college-going role models and build students' interest in college. High schools can recruit college-educated professionals to serve as volunteer mentors by reaching out to local businesses interested in partnering with schools in the community.[83] High schools also can identify volunteer mentors by recruiting local college students—particularly graduates of the high school—or partnering with a college that has service-learning opportunities for college students willing to work with high school students.[84] Individuals who share the same background as students, such as high school alumni or professionals from the local community, may understand the types of challenges students face in reaching college.[85]

76. Career Beginnings—Cave and Quint (1990); Puente—Gandara (2002); Sponsor-a-Scholar—Johnson (1998).

77. QOP—Schirm, Stuart, and McKie (2006).

78. Puente—Gandara (2004).

79. Career Academies—Kemple (2004).

80. AVID—Watt et al. (2006).

81. Career Academies—Kemple (2004); Upward Bound—Seftor, Mamun, and Schirm (2009).

82. Career Academies—Kemple, Poglinco, and Snipes (1999); Upward Bound—Myers et al. (2004).

83. Cave and Quint (1990); Gandara (2004); Pell Institute for the Study of Opportunity in Higher Education (2006).

84. Ladd (1992).

85. Calahan et al. (2004); Gandara (2004).

Mentors can take on a variety of roles for students:

- **Serve as college-going role models.** Mentors can serve as examples of college-going adults from the community and share their experiences in preparing for college, completing a college degree, and pursuing a career.[86]

- **Assist with the college entry process.** The one-on-one relationship mentors have with students allows them to provide individualized assistance with the college application and selection process for students interested in pursuing a four-year degree.[87] This might include helping with a college application, reading an application essay, assisting with a financial aid application, or researching college options (see recommendation 5).

- **Monitor academic progress.** Mentors can monitor students' academic progress by reviewing report cards and discussing students' high school coursework.[88] Mentors can advocate for students who are struggling academically to receive tutoring or additional help.

- **Listen and advise.** A mentor can simply serve as a caring adult who listens to the student, discusses his or her issues or concerns, and offers advice as needed.[89]

To fulfill these roles, mentors need to communicate regularly with students.[90] The panel recommends that mentors communicate or meet at least monthly with first-year and sophomore students, and at least weekly with juniors and seniors who are engaged in the college application and selection processes. High schools also can schedule social events or recreational activities that bring together mentors and students.

An initial mentor training can prepare mentors for their role. Providing examples of activities for mentors and students to complete together can support the mentoring relationship. In addition, high school staff should monitor mentor relationships by checking in with students and mentors to ensure that mentoring relationships are supporting students.[91]

2. Facilitate student relationships with peers who plan to attend college through a structured program of extracurricular activities.

The panel recommends that high schools use extracurricular offerings to promote the formation of college-going peer groups. The goal of these activities is to provide students with an opportunity to develop friendships with peers who plan to attend college.

College access programs can bring a group of students together on a regular basis throughout the school year to focus on preparing for college. These programs develop college-going peer groups by providing opportunities for students to work together toward a common goal of reaching college. Activities that encourage students to interact and collaborate can encourage new relationships, and these programs can be used to promote a college-going identity. For example, a program might create visible markers of group participation, such as designating a group name and meeting space or developing a group newsletter.[92]

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86. Gandara (2004).

87. Cave and Quint (1990); Johnson (1998); Ladd (1992); Pell Institute for the Study of Opportunity in Higher Education (2006).

88. Johnson (1998).

89. Calahan et al. (2004); Schirm, Stuart, and McKie (2006).

90. Johnson (1998); Schirm, Stuart, and McKie (2006).

91. Johnson (1998).

92. Gandara (2004); Guthrie and Guthrie (2002); Mehan (1996).

High schools also can develop student groups that encourage academically oriented friendships, such as a debate club or an honor society.[93] Schools can infuse these extracurricular activities with a college-going message. For example, a debate club might visit a college to meet with the college debate team, or a community service club might collaborate with a student organization from a local college.

3. Provide hands-on opportunities for students to explore different careers, and assist them in aligning postsecondary plans with their career aspirations.

The panel recommends that high schools engage students in career exploration activities that provide hands-on experiences with a career or occupation. A high school can design a sequence of career exploration activities that identify students' career interests and provide a variety of activities that inform and build on these interests.[94] For example, career or interest inventories can be used to help students identify the type of work or career that interests them. High schools can use this information to invite local professionals from these career fields to speak about their education and career paths.[95] Students can then be matched to job-shadowing opportunities that allow them to follow an adult throughout the day and experience the day-to-day work of a profession that matches their area of interest.[96] By developing relationships with local employers, high schools can link students to job-shadowing activities and help interested students obtain short-term internships.

High schools can use career interests as a starting point for discussions about students' postsecondary plans.[97] Students may have limited understanding of the level or type of education required for an occupation or career field. High schools should help students learn about the skills, knowledge, and postsecondary education needed for their area of interest and provide examples of local colleges that offer a degree in their area.[98] This information can be used to develop a long-term education plan for students that can be updated and revised over time.

Potential roadblocks and solutions

Roadblock 3.1. *Mentoring relationships between students and mentors do not last, and the availability of mentors changes over time.*

Suggested Approach. High schools can partner with local colleges that offer college students a chance to earn academic credits for volunteer work. College students who earn academic credit for their mentoring role may be more likely to maintain their relationship with students throughout the school year. Local colleges often have service-learning opportunities or campus organizations that can facilitate regular meetings with mentors.

Roadblock 3.2. *Ninth-grade students are not interested in discussing careers or their career interests.*

Suggested Approach. Students may relate to the experience and career path of high school alumni who share the same background and perspective as they do. High schools should invite alumni to speak with students about their occupations and career paths. Listening to the outlook and advice of a role model who shares their background and perspective may build students' interest in a career.

93. Gandara (2004); Mehan (1996).

94. Kemple, Poglinco, and Snipes (1999).

95. Kemple (2004); Mehan (1996).

96. Haimson and Deke (2003); Hershey et al. (1999); Kemple, Poglinco, and Snipes (1999); MacAllum et al. (2002).

97. Calahan et al. (2004); Roads to Success (2008).

98. Austin Independent School District, Office of Program Evaluation, (2002).

Roadblock 3.3. *Our school already offers many extracurricular activities and we cannot add another.*

Suggested Approach. Given limited amounts of school resources and staff time, the panel recommends that high schools think critically about the range of extracurricular activities they offer. High schools should consider the value added by each activity and consider how activities contribute to the school's college goals. A strategic plan can help schools think through the goals and expected outcomes of each activity, as well as how to efficiently allocate available resources for extracurricular activities. A high school also could require completion of certain college-going milestones, such as submission of a financial aid application, as a requirement for attending an extracurricular activity or social event.

Roadblock 3.4. *Our school has insufficient resources to offer college access programs or other activities that bring together college-going peers.*

Suggested Approach. Schools can nominate students for summer bridge programs at local colleges that allow students to interact with college-going peers, take additional academic coursework, and gain exposure to a college campus. Although these programs often target 12th-grade students who were admitted to a college, summer programs also are available for students in grades 9 through 11. These programs can help students learn about the social and cultural challenges of attending college. For example, a program might teach students about time management and study skills or provide opportunities to explore the college campus. High schools can inform students about the availability of these programs and help them understand the benefits of participating.

Recommendation 4. Engage and assist students in completing critical steps for college entry

Low-income and first-generation students often face challenges in completing the steps to college entry, such as taking college admissions tests, searching for colleges, submitting college applications, and selecting a college.[99] Students may not be aware of these steps, may lack information on how to complete them, and may not receive sufficient support and advice from those around them.[100]

High schools should engage students in the college entry process, providing hands-on assistance for each step. Students who want to attend a two- or four-year institution should receive guidance in preparing for and taking the college admissions tests and searching for a college that matches their qualifications, interests, and goals. High schools should coordinate college visits to expose students to the college environment and to help them select a college. By providing one-on-one assistance with college applications, schools can ensure that students submit applications that are complete, on time, and of sufficient quality. This recommendation is targeted at assisting students who are interested in attending a two- or four-year institution.

Level of evidence: Moderate

The panel judged the level of evidence for this recommendation to be *moderate*. Six programs with studies meeting standards with or without reservations assisted students with the college entry process.[101] Although these programs consisted of additional strategies to prepare students for college, all of them focused on helping students complete the steps to college entry. Three of the programs had a positive impact on college enrollment,[102] and three had no impact on enrollment.[103] The evidence supporting this recommendation primarily consists of programs that target low-income and first-generation students with average academic achievement. Only one program, which did not have an impact on college enrollment, targeted students at risk for dropping out of high school.[104] Since programs that assisted students with the college entry process did not consistently lead to positive impacts, the panel defined the level of evidence for this recommendation as moderate.

Brief summary of evidence to support the recommendation

Six programs with studies meeting standards provided students assistance with the college entry process.[105] Five of these

99. Cabrera and La Nasa (2000); Roderick et al. (2008).

100. Choy et al. (2000); Cunningham, Erisman, and Looney (2007); Horn and Chen (1998); Ishitani and Snider (2004); Kao and Tienda (1998); Plank and Jordan (2001); Venezia and Kirst (2005).

101. EXCEL—Bergin, Cooks, and Bergin (2007); Career Beginnings—Cave and Quint (1990); Talent Search—Constantine et al. (2006); Sponsor-a-Scholar—Johnson (1998); QOP—Schirm, Stuart, and McKie (2006); Upward Bound—Seftor, Mamun, and Schirm (2009).

102. Career Beginnings—Cave and Quint (1990); Talent Search—Constantine et al. (2006); Sponsor-a-Scholar—Johnson (1998).

103. EXCEL—Bergin, Cooks, and Bergin (2007); QOP—Schirm, Stuart, and McKie (2006); Upward Bound—Seftor, Mamun, and Schirm (2009).

104. QOP—Schirm, Stuart, and McKie (2006).

105. EXCEL—Bergin, Cooks, and Bergin (2007); Career Beginnings—Cave and Quint (1990); Talent Search—Constantine et al. (2006); Sponsor-a-Scholar—Johnson (1998); QOP—Schirm, Stuart, and McKie (2006); Upward Bound—Seftor, Mamun, and Schirm (2009).

programs helped students with college entrance exams by offering exam preparation classes, providing waivers for exam fees, or encouraging students to take the exams.[106] All but one of the programs offered students the opportunity to visit college campuses.[107] Although there was limited information to assess the nature of these visits, they were a common feature of these programs. Most of the programs offered hands-on assistance with the college application process. For example, Talent Search provided individual counseling and advice on the college application process and helped orient students to the college entry steps. Some Career Beginnings sites offered classes on how to complete college applications. QOP case managers and Sponsor-a-Scholar mentors assisted students with college applications, and Sponsor-a-Scholar held workshops for students on the application process.

How to carry out this recommendation

1. Ensure students prepare for, and take, the appropriate college entrance or admissions exam early.

College entrance exams, both the practice exams and actual exams, represent a potential barrier for students interested in a four-year college. However, students may not know about the exams or may not know how to prepare for them, and they may not follow through in scheduling or taking the exams. High schools should make sure that students interested in attending a four-year institution prepare for and take the practice exams by 11th grade, and the actual exam before 12th grade. Students who wait until their senior year to take the actual exam could miss a college application deadline or not have an opportunity to retake the test.

To ensure that students take the exams at the appropriate times, the panel recommends that schools clearly communicate the timeline for the testing schedule, including registration deadlines and test dates, to all students (see Exhibit 3 for an example of an entrance exam schedule). For example, schools could communicate information about key deadlines through email or phone blasts that reach all students, in-person visits to English classes by high school staff knowledgeable about the entrance tests, or by setting up information tables at athletic events. School staff can assist students with registering for the test, remind them about the testing schedule or other deadlines, or offer assistance with fee waivers.[108] For example, teachers in homeroom classes or study periods could encourage students to register for entrance exams and discuss how to prepare for the exams, such as getting a good night's sleep and arriving to the exam early.

Schools should ensure that students are prepared for college entrance exams by offering exam preparation classes or workshops, either directly through the school or by partnering with college access programs or other organizations.[109] Exam preparation classes can be offered on Saturdays or during other non-school hours,[110] and test preparation can include providing direct tutoring, offering practice tests, or using training software for

106. Career Beginnings—Cave and Quint (1990); Talent Search—Constantine et al. (2006); Sponsor-a-Scholar—Johnson (1998); QOP—Schirm, Stuart, and McKie (2006); Upward Bound—Seftor, Mamun, and Schirm (2009).

107. EXCEL—Bergin, Cooks, and Bergin (2007); Talent Search—Constantine et al. (2006); Sponsor-a-Scholar—Johnson (1998); QOP—Schirm, Stuart, and McKie (2006); Upward Bound—Seftor, Mamun, and Schirm (2009).

108. Calahan et al. (2004); Maxfield et al. (2003).

109. Calahan et al. (2004); Cave and Quint (1990); Johnson (1998); Maxfield et al. (2003); Myers et al. (2004).

110. Cave and Quint (1990); Maxfield et al. (2003).

Exhibit 3. Example of a college entrance exam schedule

SAT Test Dates for 2008/09				
Test Date	**Test**	**Main Deadline**	**Late Fee Deadline**	**Nearby Test Locations**
October 4, 2008	SAT I & II	September 9, 2008	September 16, 2008	High Schools A & B
November 1, 2008	SAT I & II	September 26, 2008	October 10, 2008	High Schools A & C
December 6, 2008	SAT I & II	November 4, 2008	November 18, 2008	High Schools B & C
January 24, 2009	SAT I & II	December 26, 2008	January 6, 2009	High Schools A & B
March 14, 2009	SAT I	February 10, 2009	February 24, 2009	High Schools A & C
May 2, 2009	SAT I & II	March 31, 2009	April 9, 2009	High Schools B & C
June 6, 2009	SAT I & II	May 5, 2009	May 15, 2009	High Schools A & B

ACT Test Dates for 2008/09			
Test Date	**Main Deadline**	**Late Fee Deadline**	**Nearby Test Locations**
September 13, 2008	August 12, 2008	August 22, 2008	High Schools A & B
October 25, 3008	September 19, 2008	October 3, 2008	High Schools A & C
December 13, 2008	November 7, 2008	November 20, 2008	High Schools B & C
February 7, 2008	January 6, 2008	January 16, 2008	High Schools A & B
April 4, 2008	February 27, 2008	March 13, 2009	High Schools A & C
June 13, 2008	May 8, 2009	May 22, 2009	High Schools B & C

Source: Adapted from materials created by a National College Advising Corps program site.

test preparation.[111] If the school partners with another organization to provide exam prep classes, an academic coordinator can arrange the promotion, enrollment, and content of the class.[112]

2. Assist students in their college search.

Students should receive assistance in finding a postsecondary program that matches their qualifications, interests, and goals.[113] Schools should set up one-on-one meetings with students to discuss the types of schools that are a good fit for them to consider and submit applications. School staff should help students coordinate their career interests and future plans, encouraging students to consider factors such as:

- Geography/location
- Tuition cost
- Financial aid
- School size
- Admission requirements
- Retention rates
- Demographics
- Available majors

Schools should help students understand how to gather information on colleges that will help in their search. For example, students can be given an assignment that requires them to fill in information about a college that can be obtained from the college's website. The assignment can be used as a starting point for a discussion about the type of information students should be seeking, where they can

111. Maxfield et al. (2003).

112. Johnson (1998).

113. Constantine et al. (2006); Johnson (1998); Mehan (1996); St. John et al. (2002).

Exhibit 4. Example of a college visit schedule

Time	Activity	Description
9:00AM	Arrive at college campus	
9:30AM–10:30AM	Group information session	College admissions staff provide information about the college and a summary of the college search and application process and financial aid.
10:45AM–11:45AM	Small group tours	Small group tours led by current college students (each group includes a high school chaperone).
12:00PM–1:00PM	Lunch in college dining hall	High school students have lunch with student tour guides and college admissions staff and have an opportunity to ask additional questions.
1:00PM–2:00PM	Observe college class	Small groups of students visit college classrooms.
2:30PM	Leave college campus	

Source: Adapted from materials created by a National College Advising Corps program site.

find that information on college websites, and how to compare different colleges. Students should also be guided to books or websites, such as the U.S. Department of Education's College Navigator website (http://nces.ed.gov/collegenavigator/) or database of accredited institutions (http://ope.ed.gov/accreditation/), that can assist them in searching for colleges.[114] Students should be encouraged to apply to multiple colleges to help them find a match school,[115] or to consider applying to a backup college to which they are more confident about being admitted.

3. Coordinate college visits.

The panel recommends that high schools organize trips for students to visit college campuses. These visits can introduce students to college and the college environment, inform students about the college application and selection process, and help them consider different college options. These trips should be more than a campus tour—students should have a chance to explore campus resources, observe campus life, and interact with college students (see Exhibit 4 for an example of a college visit schedule). For example, students can shadow college students, possibly alumni from their high school, throughout their day, attending classes, eating lunch, and walking around campus together.[116]

High schools should contact the admissions office of a college to set up meetings that allow students to hear from an admissions officer, a college professor, and a panel of students. Student groups on campus that represent the background or culture of high school students, such as a Latino student group, can provide a useful perspective on college and campus life.[117] A high school can plan activities that allow students to interact with campus resources, such as visiting a science laboratory or using the college library.

114. Other useful resources include the College Board Matchmaker (http://collegesearch.collegeboard.com/search/adv_typeofschool.jsp) or the Sallie Mae College Answer (http://www.collegeanswer.com/selecting/schoolcost/isc_index.jsp). These and other college planning sites are accessible through the Pathways to College Network College Planning Resource Directory (http://www.pathwaystocollege.net/collegeplanningresources/).

115. Roderick et al. (2008).

116. Calahan et al. (2004).

117. Gandara (2004).

Students also should be encouraged to participate in college access programs or summer activities that facilitate overnight stays on a campus.[118]

4. Assist students in completing college applications.

Without assistance, students may not invest sufficient time in completing college applications or may not devote attention to key details. Schools should provide students who plan to attend a four-year college with hands-on assistance in completing their college applications. High schools should work with students to ensure that their applications are complete, submitted by deadlines, and (if applicable) of sufficient quality for acceptance. Because each student's needs and interests are unique, the panel recommends that, to the extent possible, school staff provide assistance to students one-on-one or during small workshops or classes designed to assist students with completing college applications, writing application essays, or reminding them about application deadlines.[119]

The panel suggests that schools develop mechanisms for clearly communicating timelines for application milestones that occur over the course of the year (see Exhibit 5 for an example of a timeline).[120] Schools can provide a handout that lists the key dates that students need to consider for the application process in their junior and senior years.[121] The components of a timeline could include college entrance exams, college applications, the Free Application for Federal Student Aid (FAFSA) and state financial aid forms, admission acceptances, and financial aid and housing acceptances. The timelines can be formatted so that students can enter in dates specific to the colleges they are considering. Schools can use the timelines in one-on-one meetings with students to track student progress in meeting key deadlines. Schools should make sure that all informational materials about college applications are available in multiple languages and formats.

In providing one-on-one assistance, high schools can help students fill out an application, coach students on how to write a college application essay, and discuss college application fee waivers. Schools should encourage students who need letters of recommendation to request these letters in advance of the deadline to ensure that they can be completed on time. Since much of the communication with college admissions offices is electronic, schools should ensure that students create or designate an email account early in the application process to use in communicating with colleges.

118. Bergin, Cooks, and Bergin (2007); Cave and Quint (1990); Myers et al. (2004).

119. Bergin, Cooks, and Bergin (2007); Calahan et al. (2004); Cave and Quint (1990); Maxfield et al. (2003); Mehan (1996); Kahne and Bailey (1999); Kuboyama (2000); Seftor, Mamun, and Schirm (2009).

120. Mehan (1996).

121. Ibid.

Exhibit 5. Example of a college admissions timeline

April 2008

- ❑ Visit a college during spring vacation.

June 2008

- ❑ Ask teachers for letters of recommendation before summer vacation.
- ❑ Visit two colleges by the end of the month.

July 2008

- ❑ Brainstorm college essay topics.
- ❑ Visit two more colleges by the end of the month.

August 2008

- ❑ Obtain admission applications for colleges being considered.
- ❑ Write a rough draft of the college application essay.
- ❑ Search for college scholarships.

September 2008

- ❑ Complete a final draft of the college essay.
- ❑ Check in with the high school's College and Career Center on a regular basis.
- ❑ Request that high school transcripts be sent.

October 2008

- ❑ Complete college applications (or the Common Application, a general application form used by more than 150 independent colleges) by the end of the month.

November–December 2008

- ❑ Early action or early decision deadline for some colleges.
- ❑ Continue to search and apply for scholarships.

January 2009

- ❑ Application deadline for most colleges and universities (January 1 or 15).
- ❑ Contact colleges to make sure your application materials were received.
- ❑ Fill out the FAFSA (released January 1).

February 2009

- ❑ Complete the FAFSA prior to the deadline for most schools (February 1 or 15).
- ❑ Search for scholarships at the colleges you are considering.

March 2009

- ❑ Update FAFSA application, if needed.
- ❑ Receive college acceptance letters.

April 2009

- ❑ Attend open houses for colleges that offered admittance.

May 2009

- ❑ Select a college and send a deposit to the school.
- ❑ Request final high school transcripts be sent.

Source: Timeline adapted from materials created by a National College Advising Corps program site and an application timeline created by Sallie Mae at www.salliemae.com/before_college/students_plan/select_school/getting_in/understanding/application_timeline.htm.

Potential roadblocks and solutions

Roadblock 4.1. *Our counselors have large caseloads, making it difficult for them to help each student fill out applications or register for tests.*

Suggested Approach. Guidance counselors do not need to be the only resource for helping students with critical steps to college entry. Schools can consider partnering with college access programs that provide adults to assist students. Schools also can invite volunteers from the community, including college students, graduate students, or other college graduates to assist students with the process. Another potential source of volunteers is retired professionals who previously worked in college admissions or who have knowledge of the college entry process. Schools also can ensure that teachers have adequate knowledge about the college application process to assist students who approach them with questions.

Roadblock 4.2. *The time required to travel to SAT/ACT test prep sites is a barrier for students because the sites are located so far away.*

Suggested Approach. Consider making the school a test prep site. This might make it more convenient for the students to enroll in test prep classes and might give students more incentive to register for and take the entrance exam.

Roadblock 4.3. *Our staff do not have current information about college requirements.*

Suggested Approach. Teachers and counselors may be the first people whom students turn to with questions about the college application process. Schools may want to provide teachers with a short overview of the critical milestones for applying to college at the beginning of the year and provide follow-up information at critical points throughout the year, such as when college applications are typically due. Schools may want to consider providing guidance counselors with extended professional development opportunities to update their knowledge about the college application process. Schools also should provide a workshop or other training for teachers on how to write effective letters of recommendation.

Roadblock 4.4. *Parents have limited time to participate in college visits organized by the school because of their work schedules.*

Suggested Approach. Although involving parents in college visits can be difficult because of conflicts with work schedules, students and parents should be encouraged to visit a local college campus at their convenience. These visits can be less formal than the school-organized trips, but they should provide an opportunity for parents to explore college life on campus with their child. High schools can provide parents with a college trip itinerary that includes key places to visit on campus and contact information for the college admissions office.

Roadblock 4.5. *College visits require staff time and funding that are not available at our school.*

Suggested Approach. High schools should contact the admission offices of local colleges to determine whether there are available resources to support college visits. High school alumni who attended a local college may be willing to sponsor a trip for students or may be able to link the school to other alumni who can assist with the college visit. High schools also can collaborate with college access programs that have funding to support college visits and can coordinate trips.

Recommendation 5. Increase families' financial awareness, and help students apply for financial aid

Financial aid plays an important role in making college affordable and improving access to college, especially for first-generation students and students from low-income families. However, these students and their families often have limited knowledge of financial aid opportunities and may overestimate the cost of college.[122] This can create the impression that a college education is out of reach and might discourage students from taking the necessary steps in high school to prepare for college. Even when parents and students are aware of financial aid opportunities, the financial aid application process can be a barrier, with complex rules and complicated forms that can create additional roadblocks for students.[123]

High schools can ensure that students take the necessary steps to obtain financial aid by educating students and their parents early in high school about college affordability and the availability of financial aid and by helping them identify potential sources of aid. Students benefit from hands-on assistance in meeting financial aid deadlines and completing application forms.

Level of evidence: Moderate

The panel judged the level of evidence for this recommendation as *moderate* because there is evidence that the recommended practices increased the financial assistance application rate and the college enrollment rate. Two programs with studies meeting standards with reservations informed students about financial aid opportunities and provided hands-on assistance in completing financial aid applications.[124] Both of these programs had a positive impact on financial aid applications and college enrollment. Although five other programs with studies meeting standards with and without reservations provided financial aid services, the level and intensity of these services were often unclear.[125] Since the two programs that closely correspond with the panel's recommendation had a positive impact on financial aid application and college enrollment, the panel assigned a moderate level of evidence.

Brief summary of evidence to support the recommendation

The types of practices recommended by the panel formed a major part of Talent Search and the FAFSA Experiment, and both had a statistically significant impact on application for financial aid and postsecondary enrollment.[126] Almost all Talent Search projects provide individual financial aid counseling, financial aid workshops for students and/or parents, assistance with financial aid applications, and scholarship searches.[127] The FAFSA

122. Grodsky and Jones (2007); Horn, Chen, and Chapman (2003); King (2006); MacAllum et al. (2007); Tomas Rivera Policy Institute (2004).

123. Dynarski and Scott-Clayton (2007); Roderick et al. (2008).

124. FAFSA Experiment—Bettinger et al. (2009); Talent Search—Constantine et al. (2006).

125. EXCEL—Bergin, Cooks, and Bergin (2007); Career Beginnings—Cave and Quint (1990); Sponsor-a-Scholar—Johnson (1998); QOP—Schirm, Stuart, and McKie (2006); Upward Bound—Seftor, Mamun, and Schirm (2009).

126. FAFSA Experiment—Bettinger et al. (2009); Talent Search—Constantine et al. (2006).

127. Calahan et al. (2004).

Experiment compared two financial aid interventions. The first had a tax professional provide one-on-one assistance in filling out the FAFSA based on a family's income tax return, provide information on the family's financial aid eligibility for local colleges, and offer to submit the FAFSA at no cost. A second intervention provided families only information on their financial aid eligibility. The first intervention had a positive impact on the proportion of individuals who submitted the FAFSA and enrolled in college, whereas the second had no impact on either outcome.

Five other programs with studies meeting standards provided assistance with the financial aid application process: Upward Bound, Career Beginnings, Sponsor-a-Scholar, EXCEL, and QOP. Upward Bound and Career Beginnings had studies measuring financial aid outcomes, but neither had an impact on these outcomes. Both Sponsor-a-Scholar and Career Beginnings had a positive impact on college enrollment,[128] and the three remaining programs had no impact on enrollment.[129] The level and intensity of financial aid services varied across Upward Bound and Career Beginnings sites. Some sites provided financial aid counseling and hands-on assistance with financial aid applications, and others offered informational workshops for students and parents. Sponsor-a-Scholar mentors and QOP case managers assisted students with financial aid applications, and both programs held workshops on the financial aid process. The studies of these five programs offered limited information on the financial aid services provided for students.

How to carry out this recommendation

1. Organize workshops for parents and students to inform them prior to 12th grade about college affordability, scholarship and aid sources, and financial aid processes.

High schools should inform students and parents about financial aid and the cost of college early in high school. The panel recommends that high schools organize separate workshops to inform parents and students about financial aid.[130] The workshops should address misconceptions about college costs and build awareness of financial aid. The panel recommends holding an initial workshop on *college affordability* in 9th or 10th grade, ensuring that students and parents understand the cost of college and the aid available to make it affordable. A workshop on *scholarship and aid sources* should occur in 10th grade so that students and parents can begin to think about the sources of different forms of aid. Although students complete the FAFSA in their senior year, information about the *financial aid application process* should be covered in the junior year to prepare students for the process. These three financial aid topics are discussed next.

- **College affordability.** Students who think that college is too expensive or who lack information about the availability of aid may not take the necessary steps early in high school to prepare for college.[131] The panel recommends that high schools provide information about college affordability—both the cost of college and ways to cover the cost—starting in 9th grade. Schools can create a worksheet that

128. Career Beginnings—Cave and Quint (1990); Sponsor-a-Scholar—Johnson (1998).

129. EXCEL—Bergin, Cooks, and Bergin (2007); QOP—Schirm, Stuart, and McKie (2006); Upward Bound—Seftor, Mamun, and Schirm (2009).

130. Advisory Committee on Student Financial Assistance (2008); Bailis et al. (1995); Constantine et al. (2006); Cunningham, Erisman, and Looney (2007); Seftor, Mamun, and Schirm (2009).

131. Luna De La Rosa (2006).

displays potential costs for college next to potential sources of financial aid to demonstrate the realistic cost to families. Students should receive information on the typical tuition cost for two- and four-year colleges, differences between public and private institutions, and tuition estimates for local and regional colleges. High schools can provide a worksheet that has a side-by-side comparison of the cost of these schools and should help students and parents distinguish the different types of college costs, including tuition, fees, room and board, and books and supplies.

Students need to understand the types of financial aid available to cover these costs, including grants, loans, scholarships, tax credits, and work-study programs. Descriptions of financial aid, loan obligations, and grants can be confusing for individuals who may have limited interactions with banks and lending agencies; accordingly, conversations should be developed in a manner that is understandable to the student and his or her family. The workshops should encourage students and parents to estimate their financial aid eligibility using a tool to forecast eligibility based on FAFSA (e.g., FAFSA4caster, http://www.fafsa4caster.ed.gov).[132]

- **Scholarship and aid sources.** One workshop should assist students in navigating the vast array of financial aid sources to identify relevant opportunities. A list of available federal and state grants and their eligibility requirements can help students determine likely sources of aid. During the workshop, high schools also can provide a list of local and regional sources of scholarships available for students, as well as websites on which they can search more broadly for scholarships (e.g., www.fastweb.com, www.latinocollegedollars.org). Although high school advisors often maintain information on scholarship opportunities, students may not access this information unless they regularly visit a school's advising office.[133] High schools can disseminate scholarship information during the workshop and follow up with updated or additional information on the school's website or in its monthly newsletter. Schools can designate a staff member to collect and update financial aid, scholarship, and grant opportunities for students.

- **Financial aid application process.** High schools should hold workshops to inform students and parents about the financial aid application process, including details about the process for submitting the FAFSA. Students should understand the information that is needed to complete the FAFSA and should know about the online and hard-copy versions of the application. High schools should explain that the FAFSA plays a role in determining eligibility for federal loans and grants as well as state grants, scholarships, and other forms of aid. Informing students about key concepts, such as the estimated family contribution (EFC), can help students understand the meaning of their financial aid materials. Students should understand the steps in the process that occur after submitting the FAFSA, including receipt of the student aid report and a financial aid package.

Workshops on financial aid should be held for parents as well as for students.[134] High schools should develop a plan for engaging parents and encouraging them to become invested in the financial aid

132. Advisory Committee on Student Financial Assistance (2008).

133. Luna De La Rosa (2006).

134. Calahan et al. (2004); Gandara (2004); Schirm, Stuart, and McKie (2006).

and college application processes. For example, a parent institute that includes sessions on financial aid and other aspects of the college entry process could be held throughout the school year.[135] Inviting parents to informal social gatherings at the school, such as picnics or family dinners, can encourage parent involvement as well.[136] Offering child care at these events can make it easier for parents to attend and participate. The workshops for parents should discuss how they can help students complete the financial aid process and encourage them to assist students in meeting key deadlines.

2. Help students and parents complete financial aid forms prior to eligibility deadlines.

The panel recommends that high schools provide hands-on assistance to students and parents in completing financial aid forms prior to critical deadlines. In addition to workshops providing information about financial aid, high schools should hold workshops to assist high school seniors and their parents in completing the FAFSA form, to answer student questions, and to explain the information requested on the form.[137] The workshops should include volunteers who are knowledgeable on the FAFSA and can provide one-on-one help in completing the application form.[138] High schools should reach out to financial aid officers from local colleges who can train teachers or volunteers on the FAFSA and who can assist individual students during the workshop. Students should be notified of the information needed to fill out the FAFSA, such as income information from parents' tax forms, before the session. High schools can coordinate with the school library or computer lab so that students can complete the FAFSA on the Internet.

Even though high schools can reach a broad group of students through line-by-line assistance at a workshop, students may have complex questions specific to their financial situation or may be uncomfortable raising questions at a group meeting.[139] Therefore, high schools should provide individual assistance or counseling following a workshop to further assist students in completing the FAFSA or other aid applications.[140] For high schools that provide mentoring services (see recommendation 3), mentors can provide one-on-one assistance if they are knowledgeable about financial aid or if they receive training.[141] Individual financial aid counseling also can be helpful for answering questions about the Student Aid Profile, award letter, or financial aid decisions that are made after a student submits the FAFSA.

Potential roadblocks and solutions

Roadblock 5.1. *Our school does not have staff who are trained on financial aid policy.*

Suggested Approach. Financial aid officers in local colleges will be knowledgeable about financial aid and can be invited to assist students during a workshop or through one-on-one sessions.[142] High schools also could invite the financial aid officer to train teachers on financial aid and the application process so that they can assist students.

135. Tierney and Jun (2001); Standing et al. (2008).

136. Gandara et al. (1998).

137. Advisory Committee on Student Financial Assistance (2008); Cave and Quint (1990).

138. Bailis et al. (1995); Calahan et al. (2004); Seftor, Mamun, and Schirm (2009).

139. Luna De La Rosa (2006).

140. Advisory Committee on Student Financial Assistance (2008); Bailis et al. (1995); Calahan et al. (2004); Maxfield et al. (2003).

141. Johnson (1998); Pell Institute for the Study of Opportunity in Higher Education (2006).

142. Cave and Quint (1990).

Roadblock 5.2. *Guidance counselors may not have information about college costs or information about the changing nature of college costs.*

Suggested Approach. The panel suggests that high schools identify and train staff at the school who are willing to learn about financial aid and to serve as a resource for students. Math teachers or family consumer science teachers may have backgrounds that are useful for understanding the financial aid process. Establishing contacts with financial aid staff at local colleges can make it easier for teachers to stay current with information on college costs. The financial aid staff from local colleges could be useful for training teachers and other staff at the high school on financial aid topics.

Appendix A. Postscript from the Institute of Education Sciences

What is a practice guide?

The health care professions have embraced a mechanism for assembling and communicating evidence-based advice to practitioners about care for specific clinical conditions. Variously called practice guidelines, treatment protocols, critical pathways, best practice guides, or simply practice guides, these documents are systematically developed recommendations about the course of care for frequently encountered problems, ranging from physical conditions, such as foot ulcers, to psychosocial conditions, such as adolescent development.[143]

Practice guides are similar to the products of typical expert consensus panels in reflecting the views of those serving on the panel and the social decisions that come into play as the positions of individual panel members are forged into statements that all panel members are willing to endorse. Practice guides, however, are generated under three constraints that do not typically apply to consensus panels. The first is that a practice guide consists of a list of discrete recommendations that are actionable. The second is that those recommendations taken together are intended to be a coherent approach to a multifaceted problem. The third, which is most important, is that each recommendation is explicitly connected to the level of evidence supporting it, with the level represented by a grade (strong, moderate, or low).

The levels of evidence, or grades, are usually constructed around the value of particular types of studies for drawing causal conclusions about what works. Thus, one typically finds that a strong level of evidence is drawn from a body of randomized controlled trials, the moderate level from well-designed studies that do not involve randomization, and the low level from the opinions of respected authorities (see Table 1). Levels of evidence also can be constructed around the value of particular types of studies for other goals, such as the reliability and validity of assessments.

Practice guides also can be distinguished from systematic reviews or meta-analyses such as What Works Clearinghouse (WWC) intervention reviews or statistical meta-analyses, which employ statistical methods to summarize the results of studies obtained from a rule-based search of the literature. Authors of practice guides seldom conduct the types of systematic literature searches that are the backbone of a meta-analysis, although they take advantage of such work when it is already published. Instead, authors use their expertise to identify the most important research with respect to their recommendations, augmented by a search of recent publications to ensure that the research citations are up-to-date. Furthermore, the characterization of the quality and direction of the evidence underlying a recommendation in a practice guide relies less on a tight set of rules and statistical algorithms and more on the judgment of the authors than would be the case in a high-quality meta-analysis. Another distinction is that a practice guide, because it aims for a comprehensive and coherent approach, operates with more numerous and more contextualized statements of what works than does a typical meta-analysis.

Thus, practice guides sit somewhere between consensus reports and meta-analyses in the degree to which systematic processes are used for locating relevant research and characterizing its meaning.

143. Field and Lohr (1990).

Practice guides are more like consensus panel reports than meta-analyses in the breadth and complexity of the topic that is addressed. Practice guides are different from both consensus reports and meta-analyses in providing advice at the level of specific action steps along a pathway that represents a more-or-less coherent and comprehensive approach to a multifaceted problem.

Practice guides in education at the Institute of Education Sciences

The Institute of Education Sciences (IES) publishes practice guides in education to bring the best available evidence and expertise to bear on the types of systemic challenges that cannot currently be addressed by single interventions or programs. Although IES has taken advantage of the history of practice guides in health care to provide models of how to proceed in education, education is different from health care in ways that may require that practice guides in education have somewhat different designs. Even within health care, where practice guides now number in the thousands, there is no single template in use. Rather, one finds descriptions of general design features that permit substantial variation in the realization of practice guides across subspecialties and panels of experts.[144] Accordingly, the templates for IES practice guides may vary across practice guides and change over time and with experience.

The steps involved in producing an IES-sponsored practice guide are first to select a topic, which is informed by formal surveys of practitioners and requests. Next, a panel chair is recruited who has a national reputation and up-to-date expertise in the topic. Third, the chair, working in collaboration with IES, selects a small number of panelists to co-author the practice guide. These are people the chair believes can work well together and have the requisite expertise to be a convincing source of recommendations. IES recommends that at least one of the panelists be a practitioner with experience relevant to the topic being addressed. The chair and the panelists are provided a general template for a practice guide along the lines of the information provided in this appendix. They also are provided with examples of practice guides. The practice guide panel works under a short deadline of six to nine months to produce a draft document. The expert panel members interact with and receive feedback from staff at IES during the development of the practice guide, but they understand that they are the authors and, thus, responsible for the final product.

One unique feature of IES-sponsored practice guides is that they are subjected to rigorous external peer review through the same office that is responsible for independent review of other IES publications. A critical task of the peer reviewers of a practice guide is to determine whether the evidence cited in support of particular recommendations is up-to-date and that studies of similar or better quality that point in a different direction have not been ignored. Peer reviewers also are asked to evaluate whether the evidence grade assigned to particular recommendations by the practice guide authors is appropriate. A practice guide is revised as necessary to meet the concerns of external peer reviews and to gain the approval of the standards and review staff at IES. The process of external peer review is carried out independent of the office and staff within IES that instigated the practice guide.

Because practice guides depend on the expertise of their authors and their group decisionmaking, the content of a practice guide is not and should not be viewed as a set of recommendations that in every case depends on and flows inevitably from scientific research. It is not only possible but

144. American Psychological Association (2002).

also likely that two teams of recognized experts working independently to produce a practice guide on the same topic would generate products that differ in important respects. Thus, consumers of practice guides need to understand that they are, in effect, getting the advice of consultants. These consultants should, on average, provide substantially better advice than an individual school district might obtain on its own because the authors are national authorities who have to reach agreement among themselves, justify their recommendations in terms of supporting evidence, and undergo rigorous independent peer review of their product.

Institute of Education Sciences

Appendix B. About the authors

Panel

William G. Tierney, Ph.D., (Chair) is currently University Professor and Wilbur-Kieffer Professor of Higher Education at the University of Southern California's Rossier School of Education, as well as director of the Center for Higher Education Policy Analysis. His research interests pertain to access, issues of equity, organizational effectiveness, and the changing nature of academic work. He recently concluded a three-year project that examined how to improve financial aid strategies for low-income youth and their families. He also recently concluded a project on how to improve governance in four-year colleges and universities. His recent books include *Urban High School Students and the Challenge of Access* (Peter Lang), *Preparing for College: Nine Elements of Effective Outreach* (SUNY), and *Increasing Access to College* (SUNY).

Thomas Bailey, Ph.D., is the George and Abby O'Neill Professor of Economics and Education in the Department of International and Transcultural Studies at Teachers College, Columbia University. He also is the director of the Institute on Education and the Economy at Teachers College. In 1996, Dr. Bailey established the Community College Research Center at the Institute, which pursues a wide variety of quantitative and qualitative research focused primarily on improving educational outcomes for students at community colleges, especially low-income and minority students. Dr. Bailey also directs the National Center for Postsecondary Research, funded by the Institute of Education Sciences, which is conducting rigorous evaluations of widely used strategies for low-skilled students, including intensive summer bridge programs and learning communities. He is an economist, with specialties in education, labor economics, and econometrics.

Jill Constantine, Ph.D., is a senior economist and associate director of research at Mathematica Policy Research. Dr. Constantine has led a number of large-scale research and evaluation projects related to education programs, including several in the field of higher education. She was the project director for the Evaluation of College Corps. She also served as the deputy project director and, later, as project director for the U.S. Department of Education's National Evaluation of Talent Search. Dr. Constantine also has led a number of other education projects, including those in the areas of Beginning Reading, teacher preparation, and Early Head Start. Dr. Constantine has published extensively in the education field.

Neal Finkelstein, Ph.D., is a senior research scientist at WestEd, developing research and evaluation designs that study program implementation in K–12 public schools, and overseeing randomized field trials implementation in education settings. His areas of expertise include K–12 school finance, academic preparation programs for high school youth, school-to-work, and early childhood education. Dr. Finkelstein served as director of Educational Outreach Research and Evaluation for the University of California, where he implemented research and evaluation designs on 10 campuses to study the effectiveness of K–12 student and school academic programs, particularly on postsecondary education opportunities. He also served as senior program officer for the National Research Council, supporting the investigation of equity, adequacy, and productivity in K–12 public education financing.

Nicole Farmer Hurd, Ph.D., is the executive director of the National College Advising Corps (NCAC), which is headquartered at the University of North Carolina at Chapel Hill. The corps is a coalition of university-based college advising programs serving more than 48,000 students in 12 states. NCAC places recent college graduates in public high schools to partner with guidance counselors in an effort to increase their college-going rates. Dr. Hurd, who served as an assistant dean and director of the Center for Undergraduate Excellence at the University of Virginia, was the founding director of the College Guide Program, which served as the model for the Advising Corps. Dr. Hurd received the Governor of Virginia's Award for Volunteerism and Community Service and was the 2007 faculty recipient of the University of Virginia's Raven Award. Dr. Hurd remains an administrator in higher education, serving in the Office of Undergraduate Admissions at the University of North Carolina at Chapel Hill.

Staff

Jeffrey Max, M.P.A., is a researcher at Mathematica Policy Research, with experience conducting quantitative and qualitative research in the field of education. He has contributed to studies of teacher quality interventions, including evaluations of teacher incentives, teacher preparation, and teacher certification. His past work includes a study in one state of the transfer process from community colleges to teacher preparation programs.

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Appendix C. Disclosure of potential conflicts of interest

Practice guide panels are composed of individuals who are nationally recognized experts on the topics about which they are rendering recommendations. IES expects that such experts will be involved professionally in a variety of matters that relate to their work as a panel. Panel members are asked to disclose their professional involvements and to institute deliberative processes that encourage critical examination of the views of panel members as they relate to the content of the practice guide. The potential influence of panel members' professional engagements is further muted by the requirement that they ground their recommendations in evidence that is documented in the practice guide. In addition, the practice guide undergoes independent external peer review prior to publication, with particular focus on whether the evidence related to the recommendations in the practice guide has been appropriately presented.

The professional engagements reported by each panel member that appear most closely associated with the panel recommendations are noted below.

Dr. Nicole Farmer Hurd is the executive director of the National College Advising Corps, a national college peer mentoring program. Although this program is not referenced in the text of the practice guide, four of the exhibits are adapted from materials used by National College Advising Corps sites.

Appendix D. Technical information on the studies

A search for research on college access programs in the United States from 1988 to 2008 resulted in more than 500 studies. Of these, 99 studies had causal designs and examined programs that aimed to prepare secondary students (grades 6 through 12) academically for college, assist them in completing the steps to college entry, and improve their likelihood of enrolling in college. These were reviewed according to What Works Clearinghouse (WWC) standards. Sixteen studies of 10 programs met WWC evidence standards with or without reservations. Correlational studies that used longitudinal surveys of high school students, such as the National Educational Longitudinal Study (NELS),[145] to analyze the relationship between student characteristics and college outcomes were not reviewed against WWC standards because they do not provide evidence on the effectiveness of a practice or intervention. The panel focused on the programs with studies meeting standards to define a level of evidence for each recommendation in the practice guide.

An overview of the programs with studies meeting standards is provided in Table D1, which also shows the relevance of each program for the recommendations. In many cases, a program implemented only one aspect of the panel's recommendation. For example, several programs with studies meeting standards implemented the first step of recommendation 3, mentoring services, but they did not implement steps two (peer groups) and three (career exploration). In addition, many programs implemented practices that did not fully align with the panel's recommendation, or the studies provided insufficient detail to determine the extent to which a program included the recommended practices.

College access programs consist of multiple components that address a variety of steps students must take to prepare for and enter college. The bundling of multiple practices within an access program makes it difficult to assess the effectiveness of a single practice. This presents a challenge for the practice guide, which aims to provide specific strategies that schools can implement to improve access to college. The panel reviewed implementation reports of programs with studies meeting standards to assess the relative importance of each program component and to better understand program implementation (see Table D1). The panel assigned a level of evidence for each recommendation after considering the number of programs with studies meeting standards that related to each recommendation; the degree to which programs implemented the recommendation; and the programs' impacts on high school academic performance, completion of the critical steps for college entry, and college enrollment.

The panel noted two key issues in its consideration of the evidence:

- **Service receipt by the comparison group.** Several of the studies meeting standards were effectiveness studies that compared enrollment or participation in a college access program to the existing college preparation services available to students.[146] In some cases, the comparison group received a fair amount of college access services. For example, an evaluation of Upward Bound reported that 54 percent of comparison group students

145. National Center for Education Statistics (2002).

146. In contrast to efficacy studies that show the effect of a program relative to a control that receives no intervention or services, effectiveness studies show the effectiveness of a program relative to other available services or programs.

received college access services, and an evaluation of Career Beginnings noted that 35 percent of comparison group students received services similar to that program's.[147] Since schools often implement more than one college access program, students in the comparison group may participate in other college access programs. Among comparison students in the Upward Bound study, 14 percent participated in Upward Bound Math and Science, and 12 percent participated in Talent Search. Similarly, the study of Career Academies notes that comparison group students had the option of enrolling in other similar programs offered by their high school or district.

- **Programs operated by postsecondary institutions and community organizations.** Although the practice guide is designed to help high schools and school districts take actionable steps to increase college attendance, the panel notes that many of the programs with studies meeting standards were implemented by postsecondary institutions or community organizations. Four programs were primarily implemented by a postsecondary institution and two by nonprofit or community-based organizations. The panel focused on describing the practices it deemed were effective for high school students and could feasibly be implemented by a high school.

Studies that potentially meet standards

The panel used 15 studies that potentially met standards but were not assigned a WWC rating because there was insufficient information to assess baseline equivalence of the treatment and control groups. To meet standards with reservations, a study had to demonstrate baseline equivalence on at least three measures, including one measure of socioeconomic status (SES). Establishing baseline equivalence on SES is critical because there are differences in college enrollment rates between high- and low-SES students even when controlling for race and academic ability.[148] Table D2 lists the studies that potentially met standards that had insufficient information to establish baseline equivalence or did not demonstrate equivalence on a measure of SES.

This appendix describes the evidence used to support each of the recommendations made by the panel. After describing the level of evidence for the recommendation, we summarize the evidence used to support each recommendation. Since several of the programs with studies meeting standards are relevant for multiple recommendations, we provide a brief description of each program and its study below.

Talent Search is a federal program that informs students about the high school courses needed to prepare for college and the availability of financial aid to cover the cost of college. The program provides hands-on assistance with financial aid applications and helps students complete the college application process. Talent Search projects are operated by two- and four-year colleges and also provide college visits, academic support, and counseling. A quasi-experimental study of the program in Indiana, Florida, and Texas met standards with reservations.[149] The study examined the cohort of students in 9th grade in the 1995/96 school year and used propensity score matching to create a comparison group of students from the same schools or districts with the same demographic, socioeconomic, and academic characteristics as Talent Search participants. The program had a statistically

147. EXCEL—Bergin, Cooks, and Bergin (2007); Upward Bound—Myers et al. (2004).

148. Advisory Committee on Student Financial Assistance (2006); Black and Sufi (2002).

149. Constantine et al. (2006).

significant impact on financial aid application and college enrollment in all three states. The findings for college persistence were smaller than the impact on enrollment and not consistently positive across the three states.

The **Sponsor-a-Scholar** program selects at-risk students from the Philadelphia public school system and offers them an opportunity to participate in a mentoring relationship with an adult volunteer for five years as well as $6,000 for college-related expenses. Mentors are expected to meet with students at least monthly, and a program coordinator monitors mentor relationships. In addition, the program provides academic support and assistance with the college application and financial aid processes, including SAT prep classes, college visits, and workshops on financial aid; selecting a college; and preparing for the challenges of college. The study of Sponsor-a-Scholar matched a total of 180 participants across four cohorts to a comparison group of Philadelphia public school students based on race, gender, school, and grade point average (GPA).[150] The author found that the program increased college attendance in the first two years after high school but had no impact on college retention.[151]

The **FAFSA (Free Application for Federal Student Aid) Experiment** offered an intervention to assist low-income families with obtaining information on financial aid eligibility and applying for financial aid. An ongoing study of the intervention randomly assigned individuals in Ohio and North Carolina to (1) the main treatment group that received assistance in completing and submitting the FAFSA (an estimate of their eligibility for financial aid) and information on financial aid opportunities, (2) an information-only treatment group that received a written estimate of each family's financial aid eligibility (but no assistance in completing the FAFSA), or (3) a control group that received an existing booklet on the importance of college and financial aid programs.[152] Staff from H&R Block conducted the intervention, providing services to individuals who received tax preparation assistance from the company. The most recent study reported initial findings within a year of the intervention. For dependent participants, who were primarily high school seniors, the main treatment had a significant positive impact on submission of the FAFSA and college enrollment, whereas the information-only treatment did not significantly impact either outcome.

Career Beginnings is a collaboration among local colleges, public schools, and the business community that offers summer jobs, education services (e.g., tutoring), assistance in preparing for college, and adult mentors. The program enrolls students in their junior year of high school and holds workshops on preparing for college, taking college entrance exams, and completing college admissions forms. A study of seven Career Beginnings sites conducted in the second year of the program randomly assigned 1,233 eligible students to Career Beginnings or a control group.[153] The study did not find a statistically significant impact on enrollment in two-year colleges or enrollment in four-year colleges, but it reported a significant impact when these two outcomes were combined (i.e.,

150. Johnson (1998).

151. College enrollment in the second year after high school was significant at the 0.10 level. The What Works Clearinghouse (WWC) adjusts for multiple comparisons when a study examines many outcomes simultaneously since the statistical significance of findings may be overstated. However, an adjustment for multiple comparisons could not be conducted for this study because there was insufficient information to calculate an effect size and measure significance based on WWC standards (the study did not include the mean outcomes and standard deviations for the treatment and control groups).

152. FAFSA Experiment—Bettinger et al. (2009).

153. Cave and Quint (1990).

enrollment in two- and four-year colleges). The program did not have a significant effect on scholarship receipt, taking out a student loan, or college persistence.

Talent Development High School is a high school reform model for high schools struggling with poor student attendance, discipline problems, low student achievement, and high dropout rates. The model consists of Ninth Grade Success Academies that organize first-year high school students into self-contained learning communities, and Career Academies for students in grades 10 through 12 that form learning communities around a career theme. The main components of the model include a college preparatory curriculum; extended class periods; an after-school program for students with severe attendance and discipline problems; and partnerships between schools, families, and communities. Kemple et al. (2005) conducted an evaluation of the model using a quasi-experimental design that matched five Talent Development High Schools in the Philadelphia public school system to similar high schools based on race/ethnic composition and promotion rates. The program had significant positive impacts on dropping out of school and the number of high school course credits earned.

Upward Bound is a long-standing federal program designed to assist low-income students in preparing for, enrolling in, and succeeding in college. Projects are hosted primarily by four-year colleges and offer academic courses throughout the school year and during an intensive six-week summer session often held on a college campus. Other program services include tutoring, preparation for college entrance exams, extracurricular activities, college tours, and financial aid workshops. Three reports cover the evaluation of Upward Bound and include a nationally representative sample of projects.[154] At each site, applicants were randomly assigned to the program or to a control group, and the most recent follow-up study measured impacts seven to nine years after the expected date of high school graduation. This study reports no statistically significant impacts on high school outcomes (i.e., completion of course credits, GPA, or diploma), financial aid receipt, college enrollment, college selectivity, or number of college credits earned. The program increased the rate of postsecondary enrollment and the likelihood of receiving a degree, license, or certificate among students with lower educational expectations.

Career Academies are a high school reform initiative in which students are organized into small learning communities around a particular career theme. The academies combine academic and technical curricula and partner with local employers to provide career exploration and work-based learning opportunities for students. Kemple (2000, 2001, 2004, 2008) conducted a random assignment evaluation of about 1,400 students in nine schools within large, urban districts serving a disadvantaged student population. The author reports that the program did not have an impact on high school graduation or college enrollment, persistence, or degree completion eight years after students' expected graduation.

The **Quantum Opportunities Program (QOP)** is an intensive program that offers case management, mentoring, tutoring, and other education and support services for high school students. Students are matched to a case manager in 9th grade and can receive services for up to five years, even if they drop out of school or move to another district. Students receive financial incentives for participating in program activities. The random assignment study of QOP

154. Myers and Schirm (1999); Myers et al. (2004); Seftor, Mamun, and Schirm (2009).

by Schirm et al. (2006) included 1,069 students in seven sites and found no impact on attainment of a high school diploma or General Education Development (GED) test, enrollment in college or vocational training, persistence in college, or earning a bachelor's or associate's degree.

EXCEL is a scholarship incentive and support program sponsored by a public university in the Midwest that provides academic enrichment activities through summer institutes and weekend seminars on the university's campus. Students receive a scholarship to the sponsoring institution that covers tuition, fees, and books if they complete a college preparatory curriculum, maintain a B average in high school, participate in program activities, and earn a score of 18 on the ACT. The program assists students throughout high school and enlists parental participation and commitment. A relatively small random assignment study of about 70 students by Bergin et al. (2004) found that the program did not have an impact on college enrollment.

Middle College High Schools are alternative high schools designed to help students who have dropped out or are close to dropping out of high school remain in school and earn high school diplomas. The schools are located on a college campus and emphasize experiential learning, employ a thematic curriculum, offer team teaching, and provide additional support services. Dynarksi et al. (1998) evaluated a Middle College High School program in Seattle, Washington, using a randomized controlled trial. Students were randomly assigned to Middle College High School or to a control group condition in which they attended their traditional local high school. The study found no impacts on dropping out of school or the attainment of a high school diploma or GED.

Table D1. Studies of college access programs that met WWC standards with or without reservations

Program and Study Details								Recommendations				
Brief Citation	Program	Study Design	Analysis Sample Size (students)	Study Location	Program Grade Levels	Target Population	Relevant Implementation Studies	1. Courses	2. Assess	3. Networks	4. College Entry	5. Financial Aid
Positive effects on one or more relevant outcomes												
Bettinger et al. (2009)	Free Application for Federal Student Aid (FAFSA) Experiment	Randomized controlled trial (RCT)	866[a]	Ohio and Charlotte, NC	Grade 12	Low-income families with a high school senior or a recent high school graduate[b]						X
Cave et al. (1990)	Career Beginnings	RCT	1,233	Seven of 24 program sites in the following states: New York, Indiana, Florida, California, and Ohio	Grades 11–12	Low-income students in urban areas				X	X	X
Constantine et al. (2006)	Talent Search	Quasi-experimental design (QED)	10,297 to 43,414[c]	Florida, Indiana, and Texas	Grades 9–12[d]	Low-income and potentially first-generation college students	Calahan et al. (2004)	X	X		X	X
Johnson (1998)	Sponsor-a-Scholar	QED	139 to 401[e]	Philadelphia	Grades 8–12[f]	Students with average achievement and eligible for free or reduced-price lunch		X	X	X	X	X
Kemple et al. (2005)	Talent Development High School	QED	11 schools[g]	Philadelphia	Grades 9–12	Students in schools that have difficulty with attendance, discipline, achievement, and dropouts	Kemple and Herlihy (2004)		X			
No detectable effects on relevant outcomes												
Bergin et al. (2007)	EXCEL	RCT	73	Medium-sized city in the Midwest	Grades 8–12	Minority students with average academic achievement		X			X	X
Dynarksi et al. (1998)	Middle College High Schools	RCT	394	Seattle, WA	Grades 9–12	Students who are high school dropouts or likely dropouts	Hershey et al. (1995)	X				

(continued)

Table D1. Studies of college access programs that met WWC standards with or without reservations *(continued)*

Program and Study Details								Recommendations				
Brief Citation	**Program**	**Study Design**	**Analysis Sample Size (students)**	**Study Location**	**Program Grade Levels**	**Target Population**	**Relevant Implementation Studies**	**1. Courses**	**2. Assess**	**3. Networks**	**4. College Entry**	**5. Financial Aid**
No detectable effects on relevant outcomes *(continued)*												
Kemple (2000, 2001, 2004, 2008)	Career Academies	RCT	1,458	Nine Career Academies sites: Pennsylvania, Maryland, Florida, Texas, California, and District of Columbia	Grades 9–12	Low-income students in large, urban schools	Kemple and Rock (1996); Kemple et al. (1999)			X		
Schirm et al. (2006)	Quantum Opportunity Program (QOP)	RCT	1,069	Six QOP sites: Cleveland, District of Columbia, Fort Worth, Houston, Memphis, Philadelphia, and Yakima, WA	Grades 9–12	At-risk students in schools with high dropout rates	Maxfield et al. (2003)	X	X	X	X	X
Seftor et al. (2009); Myers et al. (2004); Myers and Schirm (1999); Myers et al. (1997)	Upward Bound	RCT	2,292[h]	Nationally representative sample of Upward Bound projects	Grades 9–12	Low-income and potentially first-generation students	Moore et al. (1997)	X		X	X	X

a. This represents the sample size for the subgroup relevant to this practice guide: dependent participants who were mostly high school seniors. The study targeted low-income families with a high school senior; a recent high school graduate; or an older, independent adult who was enrolled in college or who wanted to enroll in college. The total analysis sample included 16,745 individuals.

b. The study also targeted low-income families with an independent adult who was enrolled in college or who wanted to enroll in college. However, the review of the study for this practice guide focused on the subgroup of dependent participants.

c. Sample size varies by state and analysis. Texas had a within-school analysis sample of 34,869 and an across-school analysis sample of 34,346. Indiana had a sample size of 10,927. Florida had a sample size of 43,414 for the within-school analysis, and 14,721 for the across-school analysis.

d. Talent Search can start as early as 6th grade, but the study focuses on 9th graders.

e. Sample size varies by outcome.

f. Students receive services through the first year after high school graduation.

g. The authors used individual student data but did not report the number of students in the sample. All outcome measures had a sample size of 11 schools, but some measures included more cohorts of students than did others.

h. Samples size varied for different outcomes. This represents the sample size for the analysis of college enrollment and financial aid.

Table D2. Studies of college access programs that potentially met WWC standards

Program and Study Details				Recommendations				
Brief Citation	**Program**	**Analysis Sample Size**	**Study Location**	**1. Courses**	**2. Assess**	**3. Networks**	**4. College Entry**	**5. Financial Information**
Insufficient information to establish baseline equivalence								
Allensworth et al. (2008)	College preparatory coursework requirement	Between 21,587 and 26,197 students per cohort (10 cohorts)	Chicago, IL	X				
Attewell and Domina (2008)	Advanced high school curriculum	Between 544 and 3,279 students depending on the analysis	National	X				
Crook (1990)	College Now	926 students[a]	City University of New York		X			
Dougherty et al. (2006)	Advanced Placement (AP) courses	Between 4,959 and 41,458 students per subgroup[b]	Texas	X				
Gandara (2002, 2004); Gandara et al. (1998)	High School Puente	144 students	California high schools	X		X		
Hargrove et al. (2008)	AP Courses	Between 38,907 and 42,199 students per cohort (4 cohorts)	Texas public high schools	X				
Howell, Kurlaender, and Grodsky (2009)	California Early Assessment Program	More than 1 million students	CSU–Sacramento students		X			
Jeong (2009)	AP courses	Between 12,130 and 12,870 students depending on the analysis	National	X				
Keng and Dodd (2008)	AP courses/ exams	Varies by analysis and cohort[c]	University of Texas at Austin	X				
Moreno (2002)	Puente	62 students (31 matched pairs)	California high schools	X		X		
Opuni (1999)	Project GRAD	555 students for math analysis; 547 students for reading analysis[d]	Houston, TX		X			
Standing et al. (2008)	GEAR UP	2,687 students (administrative record analysis) and 2,578 students (survey analysis)	National	X	X			
Watt et al. (2006)	AVID	20 high schools	Texas	X		X		

a. Most analyses use a sample of 926 students. One analysis of enrollment has a larger sample of 25,399 students, and another analysis has a sample of 743 students.

b. All analysis is by subgroup, resulting in varying sample sizes.

c. Sample sizes range across four cohorts and across 10 different AP subjects.

d. These sample sizes are for the specific analyses in this study eligible for a WWC review.

Recommendation 1. Offer courses and curricula that prepare students for college-level work, and ensure that students understand what constitutes a college-ready curriculum by 9th grade

Level of evidence: Low

Despite the importance of this recommendation, the level of evidence that supports it is *low* by WWC standards. This is primarily a function of the challenge of conducting research on course taking in any experimental or quasi-experimental capacity. More than perhaps any other recommendation in this guide, the related evidence is subject to major concerns about selection bias: are the differences in observed outcomes between students who do and do not enroll in a given course attributable to the effects of that course or to some unobservable characteristics—motivation, for example—that lead students to take that course in the first place?

The evidence for taking a college-ready curriculum consists of six studies that potentially met standards.[155] Two of the studies provide mixed evidence on the effect of a rigorous high school curriculum,[156] and four studies show positive effects of Advanced Placement (AP) courses.[157] The evidence for academic advising is stronger, with six relevant programs that had studies meeting standards, but the impact of academic advising could not be isolated from other program components.[158] Despite the limited evidence for this recommendation, the panel believes that offering the courses needed to prepare for college and informing about those courses are critical steps for improving college access.

Summary of evidence

The panel reviewed 25 studies related to college readiness and curricula. Of these, six were related to curricular offerings, none of which provided sufficient evidence to assign a WWC rating but could potentially meet standards.[159] Five of the college readiness studies examined the effects of the Advancement Via Individual Determination (AVID) program specifically: of these, four did not meet standards,[160] and the other could potentially meet standards.[161] The fourteen remaining studies addressed elements of academic and curricular advising. Of these, studies of six programs met WWC standards with or without reservations, and two of these had a positive effect on college enrollment.[162] Three did not meet evidence standards, and the remaining five could potentially meet standards.

Mixed evidence on implementing a college-ready or college prep curriculum

The panel drew on an extensive body of correlational work to reinforce its opinion

155. Allensworth et al. (2008); Attewell and Domina (2008); Dougherty, Mellor, and Jian (2006); Hargrove, Godin, and Dodd (2008); Jeong (2009); Keng and Dodd (2008).

156. Allensworth et al. (2008); Attewell and Domina (2008).

157. Dougherty, Mellor, and Jian (2006); Hargrove, Godin, and Dodd (2008); Jeong (2009); Keng and Dodd (2008).

158. EXCEL—Bergin, Cooks, and Bergin (2007); Talent Search—Constantine et al. (2006); Middle College High School—Dynarski et al. (1998); Sponsor-a-Scholar—Johnson (1998); Upward Bound—Myers et al. (2004); QOP—Schirm, Stuart, and McKie (2006).

159. Allensworth et al. (2008); Attewell and Domina (2008); Dougherty, Mellor, and Jian (2006); Hargrove, Godin, and Dodd (2008); Jeong (2009); Keng and Dodd (2008).

160. Bailey (2002); Black et al. (2008); Lozano, Watt, and Huerta (2009); Watt, Huerta, and Lozano (2007).

161. Watt et al. (2006).

162. EXCEL—Bergin, Cooks, and Bergin (2007); Talent Search—Constantine et al. (2006); Middle College High School—Dynarski et al. (1998); Sponsor-a-Scholar—Johnson (1998); Upward Bound—Myers et al. (2004); QOP—Schirm, Stuart, and McKie (2006).

that schools must offer courses and curricula that prepare students for college. The panel identified five studies using data from the National Center for Education Statistics (NCES)—typically, NELS, the Education Longitudinal Study (ELS), or High School and Beyond (HSB)[163]—that showed a positive correlation between course taking and outcomes related to this guide.[164] Additionally, six recent quasi-experimental studies were identified and reviewed—two on rigorous curricula and four on AP specifically—that provide more cautionary evidence (and even some unintended negative consequences) and could potentially meet standards.[165] Also, five studies of the AVID program were reviewed and demonstrated positive effects of the program, which mandates enrollment in the college prep track for all students, but most of these did not meet standards and one provided insufficient evidence to be assigned a rating (but could potentially meet standards).[166]

Two studies with quasi-experimental designs (QEDs) were identified that studied the effect of requiring students to enroll in a college prep curriculum.[167] Most recently and notably, Allensworth et al. (2008) use an interrupted time-series cohort design to measure the effects of the policy in Chicago that ended remedial classes and required college prep coursework for all students in the district. Although the study does not demonstrate equivalence between its treatment and comparison groups, given that the samples are constructed from similar groups of students at the same schools at different periods of time, it is likely that they would be similar on observable measures. The study finds that although more students completed the 9th grade with credits in algebra and English, there was no effect on test scores, dropout rates, or the likelihood of entering college, and failure rates increased. Attewell and Domina (2008) use NELS data to demonstrate that *taking* a more intense curriculum in high school has positive effects on 12th-grade test scores and probabilities of entering and completing college. Although the authors used propensity score techniques to match samples of students, evidence of equivalence between the groups was not presented for each outcome.

Although AP has been extensively studied, few evaluations use a comparison group design to estimate the effect of AP course taking on college outcomes. The panel identified four QEDs that could not be assigned a rating because they did not provide information on the equivalence of the treatment and comparison groups. Dougherty's (2006) student-level analysis indicates that in all considered subgroups in Texas (Blacks, Hispanics, Whites, low-income students, and non-low-income students), the rate of bachelor's degree attainment in each of the three treatment groups (college-going high school graduates who pass one or more AP exams, those who take but do not pass any AP exams, and those who take one or more AP courses but do not take any AP exams) is significantly higher than the rate of bachelor's degree attainment in the control group (college-going high school graduates who do not take any AP courses or exams), but no evidence is provided on the equivalence of those groups although they are matched on SES and 8th-grade test scores. Similarly, using ELS data, Jeong (2009) finds that enrollment in AP coursework in 11th or 12th grade is associated

163. National Center for Education Statistics (1992, 2002, 2006b).

164. Adelman (1999, 2006); Gamoran and Hannigan (2000); Lee and Ready (2009); Lee, Croninger, and Smith (1997).

165. Allensworth et al. (2008); Attewell and Domina (2008); Dougherty, Mellor, and Jian (2006); Hargrove, Godin, and Dodd (2008); Jeong (2009); Keng and Dodd (2008); Spielhagan (2006).

166. Bailey (2002); Black et al. (2008); Lozano, Watt, and Huerta (2009); Watt, Huerta, and Lozano (2007); Watt et al. (2006).

167. Allensworth et al. (2008); Attewell and Domina (2008).

with a significantly higher probability of completing high school within four years after the sophomore year of high school and a significantly higher probability of entering a four-year college within four years after the sophomore year of high school. Hargrove (2008) reports that students who took both the AP course and the AP exam had higher college GPAs, earned more credits, and had higher graduation rates than did students who took only the AP course or a non-AP course in the same subject area. Keng and Dodd (2008) find that students who take AP courses and receive college credit for their exam scores have better college outcomes than do students of similar abilities who do not participate in AP, but again, no information is provided to enable the panel to determine the equivalence of those groups.

AVID is an academic intervention that targets students "in the academic middle"—those who are potentially first-generation college students earning average grades—and encourages them to enroll in the college prep curriculum at their school, including honors and AP classes. AVID places low-track students in high-track classes and provides support for the students to transition to college. AVID works hard to place its students in college prep courses. It also provides students with exposure to an academic environment similar to that found in college classrooms. College entry skills and academic survival skills including study habits, organization, management, critical reading skills, and standardized college entrance exam preparation are areas targeted in the AVID elective class.

Like AP, the intervention has been extensively but not rigorously studied. Four studies of the program with causal designs did not meet standards. One studied the effects of AVID on a set of matched schools in Texas, although not enough information was provided to determine the equivalence of the treatment and comparison groups, and found that AVID schools showed increases in enrollment in courses of high rigor and in high school graduation by the authors' calculations.

Limited evidence on academic advising

The evidence to support the panel's suggestion that schools *promote comprehension of what constitutes a college-ready curriculum* and *develop a four-year course trajectory with each 9th grader that leads to a fulfilled college prep track* is stronger but not sufficient for a moderate rating. The panel reviewed 13 empirical studies with causal designs located in the WWC literature search, including six that met standards with or without reservations,[168] four that could potentially meet standards,[169] and three that did not meet standards.[170] Of the six that met WWC standards,[171] the evaluations nevertheless could not isolate the effect of the advising practice from other aspects of the intervention.

Talent Search provides its students with information about the types of courses they should take to prepare for college. In Sponsor-a-Scholar, the mentor and a class coordinator work with students and school staff to ensure that students are enrolled in a college preparation course of study. Two quasi-experimental studies of the programs

168. EXCEL—Bergin, Cooks, and Bergin (2007); Talent Search—Constantine et al. (2006); Middle College High Schools—Dynarski et al. (1998); Sponsor-a-Scholar—Johnson (1998); QOP—Schirm, Stuart, and McKie (2006); Upward Bound—Seftor, Mamun, and Schirm (2009).

169. Puente—Gandara (2002, 2004); Puente—Gandara, Mejorado, Gutierrez, and Molina (1998); Puente—Moreno (2002).

170. Bailis et al. (1995); Math and Science Upward Bound—Olsen et al. (2007); Early Academic Outreach Program—Quigley (2003).

171. EXCEL—Bergin, Cooks, and Bergin (2007); Talent Search—Constantine et al. (2006); Middle College High Schools—Dynarski et al. (1998); Sponsor-a-Scholar—Johnson (1998); QOP—Schirm, Stuart, and McKie (2006); Upward Bound—Seftor, Mamun, and Schirm (2009).

found positive effects of their respective programs on college enrollment.[172]

Other applicable college outreach programs involve academic advising in some capacity. QOP is designed so that case managers provide advice on selecting college preparatory courses in high school. EXCEL provides assistance in signing up for a college preparation curriculum in high school, and it requires that students pursue rigorous college preparation coursework to receive a scholarship. Middle College High Schools encourage disadvantaged students to enroll in college-level courses through dual enrollment opportunities on a college campus. Upward Bound projects offer academic counseling in addition to the host of courses that parallel or anticipate the high school's college prep curriculum.[173] However, rigorous studies of these four programs that met WWC standards did not demonstrate any impacts on outcomes relevant to this guide.

The panel identified causal studies of three otherwise relevant programs for this recommendation that could potentially meet standards but did not provide sufficient information to assign a rating. The Puente program ensures that students are placed in college prep courses, and a school counselor assists students with selecting college-level classes and may talk about college prep requirements during the Puente class. The reviewed studies of Puente demonstrated positive effects on high school courses fulfilling California's A–G requirements and on enrollment in a four-year college. GEAR UP provides information on the types of courses students should take to prepare for college. Although the national evaluation of the program does not yet report on high school outcomes, the authors find that students in GEAR UP schools are more likely to take above-grade-level science courses in middle school, and for African-American students, more rigorous courses in general. The Gateway to Higher Education program, designed to increase minority opportunities for college (particularly in the areas of math and science), requires its participants to enroll in a curriculum designed to keep students on track to college, including a requirement for science courses with lab components. One study of Gateway found that it had a positive effect on high school graduation, the number of college prep courses taken, and the number of Regents exams taken, particularly in math and science. Regents tests are the standardized subject examinations required of New York State high school students.

Recommendation 2. Utilize assessment measures throughout high school so that students are aware of how prepared they are for college, and assist them in overcoming deficiencies as they are identified

Level of evidence: Low

The panel determined that the level of evidence supporting this recommendation is *low*. In this case, the rating is not necessarily a result of limited or poor research: the ability to implement related data and assessment systems is a fairly recent development. Advances in both capabilities and resources devoted to state longitudinal datasets have been promising, but these data do not yet exist for many jurisdictions. As they become more prevalent, the panel expects that research on their use also will expand.

Although four programs with studies meeting standards included practices related to data use and additional instruction to assist students, these practices were neither isolated in the evaluation nor necessarily a major component of the program.[174]

172. Talent Search—Constantine et al. (2006); Sponsor-a-Scholar—Johnson (1998).

173. Moore et al. (1997).

174. Talent Search—Constantine et al. (2006); Sponsor-a-Scholar—Johnson (1998); Talent

Studies of two programs[175] potentially meeting standards suggest that the use of data to identify and notify students of their academic progress during high school had an impact on college outcomes. There also is suggestive evidence that district- or statewide use of assessments associated with college readiness (such as PLAN and ACT) is associated with improved college outcomes, but this correlation does not mean that requiring students to take those tests caused improved access to college.[176]

Summary of evidence

To support its recommendation, the panel reviewed 12 studies of eight programs or interventions that use assessments and data to improve college access for disadvantaged students. For those students identified as not college ready, the panel recommends that schools and districts develop individualized plans to support these students. The panel was able to derive support for this suggestion from the methods college prep and college access programs use to help students "catch up." This includes four programs with studies that met WWC standards with or without reservations;[177] two of which showed positive effects on college enrollment.[178] However, for each of these four programs, the applicability to this recommendation is most tenuous, since the relevant component involves providing tutoring and other academic support to students identified as needy.

Development High Schools—Kemple, Herlihy, and Smith (2005); QOP—Schirm, Stuart, and McKie (2006).

175. College Now—Crook (1990); California Early Assessment Program (EAP)—Howell, Kurlaender, and Grodsky (2009).

176. ACT (2008a, 2008b, 2009a, 2009b).

177. Talent Search—Constantine et al. (2006); Sponsor-a-Scholar—Johnson (1998); Talent Development High School—Kemple, Herlihy, and Smith (2005); QOP—Schirm, Stuart, and McKie (2006).

178. Talent Search—Constantine et al. (2006); Sponsor-a-Scholar—Johnson (1998).

More directly relevant to the recommendation was a series of eight quasi-experimental studies of four other programs more concentrated on using assessment measures to facilitate college readiness:

California's **Early Assessment Program** (EAP) is a collaboration with the California State University (CSU) system to ensure that college-bound high school graduates attain the level of English and mathematics skills articulated by CSU faculty as necessary for college success. CSU modified the 11th-grade California Standards Tests to assess English and math and provide timeline information to juniors about their readiness for college English and math courses. The modified test provides diagnostic information at the student level. Students who are not assessed as college ready have the opportunity to enroll in an Expository Reading and Writing Course (ERWC) in their senior year to address deficiencies. The ERWC materials encourage students' independent thinking and grappling with text. One quasi-experimental study of EAP[179] showed positive effects on reducing the need for remediation in college, but it did not provide sufficient information to ensure that the matched groups of students were equivalent *and* had matched on a measure of socioeconomic status.[180] Another compared the outcomes of students enrolled in a 12th-grade English course piloting the ERWC materials to those in a regular 12th-grade English class.[181] The authors found that the treatment group's performance on a Reading and Composing Skills Test (RCST) was higher using a one-tailed significance test; however, using a two-tailed test and adjusting for clustering, the WWC found that this difference was not significant.

College Now is an early warning and support system for students. Students

179. Howell, Kurlaender, and Grodsky (2009).

180. Ibid.

181. California State University (2005).

are evaluated in their junior high school year based on a combination of their GPA and scores on the Regents tests. They are then told if they have the option to earn college credits free of charge in a dual enrollment program, or whether they are in need of remediation (in reading, writing, or math). One quasi-experimental study of College Now could not be assigned a rating because it did not provide information on the equivalence of the treatment and comparison groups.[182] According to reported point estimates, College Now participants are more likely than nonparticipants to enroll in senior College of New York (CUNY) colleges, to enroll in bachelor of arts programs, and to enroll for second and third semesters in CUNY; College Now participants also take fewer remedial courses and earn more degree credits in the first two semesters in CUNY than do nonparticipants.

GEAR UP is a schoolwide program designed to increase college awareness and preparedness for disadvantaged students, and it is supposed to provide individualized academic support for students. According to the first report from the national study of GEAR UP programs (which does not report on any high school or postsecondary outcomes and does not provide sufficient information to assign a rating), the supplemental services provided to students, such as tutoring, were targeted to those students with academic problems and those who were not performing well on standardized assessments.[183] Another study of GEAR UP in California similarly does not provide information to establish group equivalence and shows no significant effect of GEAR UP by 8th grade.[184]

Project GRAD staff place a premium on data analysis—to understand and track students' progress toward meeting graduation requirements and to improve GPAs, achievement levels, and other student outcomes. One component of one study of Project GRAD potentially met standards. The study did not provide sufficient information to establish equivalence of its treatment and comparison groups (the other approaches do not meet WWC standards). The authors report that middle school students in the treatment group outperformed students in the comparison group on both reading and math on the Stanford 9[185] and Texas Assessment of Academic Skills (TAAS)[186] tests.[187] The other study components examined program impacts on high school outcomes but did not use a design that met WWC standards. The panel also identified a well-designed, rigorous study of Project GRAD in Houston, Texas, that nevertheless does not meet standards because the treatment and comparison schools are not equivalent in terms of race/ethnicity and the study does not provide evidence of equivalence on a measure of SES, which is a necessary condition of meeting standards for this guide.[188] However, the authors report that the program had no impact on the completion of algebra in ninth grade, high school student achievement, four-year graduation rates, or completion of a college prep curriculum on-time.

Finally, support comes from correlational studies showing positive effects from implementation of different elements of **ACT's College Readiness System**:[189] EXPLORE and PLAN, administered in 8th and 10th grades as precursors to the ACT; the ACT (along with the SAT, one of two national college admissions tests); and COMPASS, the national college placement test administered by ACT. The argument for administering such exams jurisdiction-wide to all

182. Crook (1990).

183. Standing et al. (2008).

184. Cabrera et al. (2006).

185. Pearson (1996).

186. Texas Education Agency (2002).

187. Opuni (1999).

188. Snipes et al. (2006).

189. ACT (2008a, 2008b, 2009a, 2009b).

students is that it sets signals for academic achievement and provides everyone, even students who had not previously considered college, with the chance to identify academic strengths and weaknesses. The correlational studies conducted by ACT found that outcomes improved jurisdiction-wide for the entire population of tested students at rates similar to those of college-bound students nationally.

Recommendation 3. Surround students with adults and peers who build and support their college-going aspirations

Level of evidence: Low

The panel defined the level of evidence for this recommendation as *low* because of limited evidence that the recommended practices improve college enrollment rates. Although the panel identified evidence that supports mentoring—the first step of this recommendation—there is limited evidence on the other two steps. Six programs with studies meeting or potentially meeting standards are aligned with one or more steps in this recommendation.[190] Three of these programs had a positive impact on college enrollment,[191] and three did not impact enrollment.[192] However, isolating the impact of the recommended practices is difficult because these programs included a variety of other strategies. A few correlational studies reported a relationship between having friends with college plans and college enrollment, but they do not provide evidence on the causal effect of college-going peers.[193] Despite the low evidence rating, the panel believes that linking students with college-going adults and peers is important for building aspirations and supporting college entry.

Summary of evidence

The panel separately reviewed studies for each of the steps that make up this recommendation.

Mixed evidence on mentoring

Four programs had studies that met or potentially met standards and provided mentoring services.[194] Studies of Sponsor-a-Scholar, Career Beginnings, and Puente reported a positive impact on college enrollment,[195] whereas a study of QOP found no impact on college enrollment.[196]

The Sponsor-a-Scholar program matched Philadelphia public school students to an adult mentor for five years starting in 9th grade. Mentors were expected to meet with students at least monthly to monitor their academic performance and assist them in preparing and applying for college. For example, the program asked mentors to review students' report cards for each grading period and to help students stay on track academically. A program coordinator recruited mentors, matched them to students, and monitored mentoring relationships. The quasi-experimental study of Sponsor-a-Scholar found that the program increased college attendance in the first two

190. Career Beginnings—Cave and Quint (1990); Sponsor-a-Scholar—Johnson (1998); Puente—Gandara (2002); Career Academies—Kemple (2004); QOP—Schirm, Stuart, and McKie (2006); Upward Bound—Seftor, Mamun, and Schirm (2009).

191. Career Beginnings—Cave and Quint (1990); Puente—Gandara (2002); Sponsor-a-Scholar—Johnson (1998).

192. Career Academies—Kemple (2004); QOP—Schirm, Stuart, and McKie (2006); Upward Bound—Seftor, Mamun, and Schirm (2009).

193. Horn and Chen (1998); Hossler, Schmit, and Vesper (1999); Sokatch (2006).

194. Career Beginnings—Cave and Quint (1990); Puente—Gandara (2002, 2004); Sponsor-a-Scholar—Johnson (1998); QOP—Schirm, Stuart, and McKie (2006).

195. Career Beginnings—Cave and Quint (1990); Sponsor-a-Scholar—Johnson (1998); QOP—Schirm, Stuart, and McKie (2006).

196. QOP—Schirm, Stuart, and McKie (2006).

years after high school but had no impact on whether students remained enrolled between the first and second years.[197]

The Career Beginnings program offered students a two-year relationship with an adult mentor in addition to academic tutoring, summer jobs, and various college preparation activities. Mentors were college-educated professionals who served as role models for students and assisted them in developing career goals and applying to college. The random assignment study of Career Beginnings did not report a significant impact on enrollment in two-year colleges or enrollment in four-year colleges, but it reported a significant impact when these two outcomes were combined (i.e., enrollment in two- and four-year colleges). Although mentors were an important component of the Career Beginnings approach, the program included several other activities, such as summer employment, that make it difficult to assess the role of mentoring in contributing to program impacts.

QOP assigned a case manager to at-risk students for five years who was expected to serve in a mentoring role. Case managers worked with about 15 to 25 participants and often developed relationships described as similar to "that of a caring aunt or uncle."[198] In addition to mentoring services, the program offered supplemental instruction, support services, and community service activities. The random assignment study of QOP in seven sites found no impact on college enrollment, retention, or attainment.[199]

The High School Puente program had one study that potentially meets standards. The quasi-experimental study did not provide sufficient information to assign a rating. The study matched 72 Puente students in three California high schools to 72 non-Puente students based on grades, reading scores, ethnicity, social background, and gender.[200] However, there was insufficient information to determine whether these two groups were comparable on a measure of socioeconomic status (a requirement for quasi-experimental studies in this guide to meet standards with reservations). The author reports a significant positive effect on four-year college enrollment but did not provide information on the statistical significance of other college enrollment outcomes. The Puente program recruited mentors from the local community to serve as role models for Latino high school students and to spend time with students' families. As a note of caution, the study found that mentors had difficulty establishing a relationship with 9th-grade students who were often focused on the day-to-day challenges at school rather than on long-term education plans. The authors suggest this may have been related to the characteristics of the mentors themselves, and they report that group activities for mentors and students and efforts by mentors to reach out to parents were useful strategies.

The panel relied on three additional programs for mentoring practices, although these programs had studies that did not meet WWC standards. The College Bound program recruits Boston College students to mentor students in local high schools. The mentors develop a relationship with students through monthly meetings and advise them about the college application and selection processes.[201] The Washington State Achievers program, which also includes college scholarships, links students to "hometown mentors" from the community who assist students with the college and financial aid application processes be-

197. The author reports that college enrollment in the second year after high school was significant at the 0.10 significance level.

198. Maxfield et al. (2003).

199. Schirm, Stuart, and McKie (2006).

200. Gandara (2002).

201. Ladd (1992).

ginning in their junior year.[202] The I Have a Dream program does not match students to mentors, but it has a program coordinator who is expected to assist and support students throughout middle and high school on their path to college.[203]

Limited evidence on the role of peers

Three programs with studies that met or potentially met standards focused on the role of peers, including one that had a positive impact on college enrollment,[204] one that had no impact on enrollment,[205] and one with a study that did not measure college enrollment.[206] All three programs organized students into groups that facilitated academically oriented friendships. However, these programs do not provide direct evidence on the role of peers because they consist of several other components designed to improve college access.

Only one program with a study meeting standards relied on an approach relevant for this recommendation.[207] Career Academies group students into small learning communities of 50 to 75 students who take academy classes together throughout high school. The program encouraged collaboration among students and expected the academies to serve as "communities of support" for students. This approach promoted the formation of academically oriented peer groups among students. Although a large random assignment study of Career Academies in nine schools found no impact on high school graduation, college enrollment, or postsecondary attainment, the effectiveness of the small learning community approach to career exploration activities cannot be distinguished from other aspects of the program.[208]

The panel used practices from two programs with studies that potentially meet standards. The Puente program encouraged the formation of peer groups by mixing high- and low-achieving Latino students in an English class for two years.[209] In addition, Puente students participated in a club that supported their college preparation activities. The study of Puente potentially meets standards because there was insufficient information to assess baseline equivalence of the treatment and control groups. The study reported a significant positive impact on four-year college enrollment, but it did not provide information on statistical significance for other types of college enrollment.

The AVID program places promising students on a college preparatory track and provides multiple activities to prepare and support these students academically. The program encourages the formation of a peer group by having students take a yearlong AVID course that teaches study skills, provides tutoring, and assists students in preparing for college. The program promotes a group identity by using an AVID logo, setting aside a classroom for AVID students, and providing opportunities for students to collaborate.[210] One study of AVID potentially meets standards, but it provided insufficient information to assess equivalence of the matched treatment and comparison groups. The study matched 10 AVID high schools to 10 non-AVID high schools based on student race and SES as well as school size, type (i.e., urban or rural), and accountability rating.[211] The authors did not report college enrollment outcomes but found a positive effect of the program on school-level achievement.

202. Engle, Bermeo, and O'Brien (2006).

203. Kahne and Bailey (1999); Kuboyama (2000); McGrath and Hayman (1997).

204. Gandara (2004).

205. Kemple (2004).

206. Watt et al. (2006).

207. Kemple (2004).

208. Ibid.

209. Gandara (2004).

210. Guthrie and Guthrie (2002); Mehan (1996).

211. Watt et al. (2006).

However, the study did not report the statistical significance of this finding.

Lack of evidence on career exploration

The panel identified two programs with studies meeting standards that offered career exploration activities, although neither had an impact on college enrollment.[212] Career exploration activities represent a major component of the Career Academies approach and are commonly implemented by Upward Bound sites. The panel could not isolate the effect of career exploration activities because both programs consist of several other components—Career Academies offer a comprehensive school-to-work approach that organizes students into small learning communities and combines vocational and college preparatory curricula, and Upward Bound prepares students academically for college through classes offered during the school year and summer.

Career Academies implement a variety of career exploration activities, including speakers from the business community, visits to employer sites, career fairs, and job shadowing.[213] Career Academies often offer a sequence of career activities, beginning with interest inventories and employer site visits, and leading up to job shadowing and internships.[214] Career Academies students take classes in learning communities that are organized around different career themes.

Most Upward Bound grantees offer career development activities, such as career planning assistance, meetings with employers, employer site visits, and job shadowing.[215] Although detailed information about these activities is not available, an implementation study of Upward Bound found that a majority of sites provide job-shadowing opportunities. A random assignment study of Upward Bound found no significant impact on high school completion, college enrollment, or college credits earned.[216] The program did have a positive significant impact on four-year college attendance for first-generation students. However, these impacts cannot be attributed specifically to career development activities because Upward Bound included several other components.

The panel relied on practices from four programs that did not have studies meeting standards. The Lansing Area Manufacturing Partnership (LAMP) linked students to work-based learning experiences in a local General Motors factory, including several hands-on activities. Although a study of the program matched participants to nonparticipants based on gender, race, age, GPA, and school, the two groups were not matched on an indicator of socioeconomic status.[217] An implementation study of the School-to-Work Opportunities Act included surveys of school-to-work partnerships, student surveys, and case studies of eight states.[218] According to the study, students viewed one-on-one interaction with an adult—job shadowing, paid jobs, and unpaid internships—as the most useful type of career exploration activity. An implementation of GEAR UP in Austin, Texas, describes how the program used online interest inventories to identify students' career interests and help them understand the knowledge and skills needed for their area of interest.[219] The Roads to Success program, which is being evaluated in a random assignment study

212. Kemple (2004); Seftor, Mamun, and Schirm (2009).

213. Kemple, Poglinco, and Snipes (1999).

214. Ibid.

215. Moore et al. (1997).

216. Myers et al. (2004); Seftor, Mamun, and Schirm (2009).

217. MacAllum et al. (2002). In addition, the study did not provide information to assess the equivalence of the treatment and comparison groups used in the analysis.

218. Hershey et al. (1999).

219. Austin Independent School District, Office of Program Evaluation (2002).

that has not produced impact findings yet, helps students link their career interests and education plans.[220]

Recommendation 4. Engage and assist students in completing critical steps for college entry

Level of evidence: Moderate

The panel judged the level of evidence for this recommendation to be *moderate*. Six programs with studies meeting standards with or without reservations provided assistance with the college entry process.[221] Although these programs consisted of other strategies to prepare students for college, all of them focused on helping students complete the steps to college entry. Three of the programs had a positive impact on college enrollment,[222] and three had no impact on enrollment.[223] The panel notes that the evidence for this recommendation focuses on programs that serve low-income and first-generation students with average academic achievement. Only one program, which did not find an impact, specifically targeted students at risk for dropping out of high school.[224] Since programs that assisted students with the college entry process did not consistently lead to positive impacts, the panel defined the level of evidence for this recommendation as moderate.

Summary of evidence

Six programs that assisted students with the college entry process had studies that met standards.[225] Three of these programs had positive effects on college access or college enrollment outcomes,[226] and three had no impact on college enrollment.[227]

A main purpose of the Talent Search program is to assist students with the college entry process. The program sites often have staff who work directly with students to counsel and advise them about the college admissions process.[228] An implementation study found that more than 90 percent of projects provide college orientation activities, college visits, and counseling.[229] In addition, project directors described college visits as one of the top two activities that contributed to program objectives.[230] The large-scale study of Talent Search participants in three states found positive effects on the percentage of students taking college entrance exams and college enrollment.[231]

220. Roads to Success (2008a, 2008b).

221. EXCEL—Bergin, Cooks, and Bergin (2007); Career Beginnings—Cave and Quint (1990); Talent Search—Constantine et al. (2006); Sponsor-a-Scholar—Johnson (1998); QOP—Schirm, Stuart, and McKie (2006); Upward Bound—Seftor, Mamun, and Schirm (2009).

222. Career Beginnings—Cave and Quint (1990); Talent Search—Constantine et al. (2006); Sponsor-a-Scholar—Johnson (1998).

223. EXCEL—Bergin, Cooks, and Bergin (2007); QOP—Schirm, Stuart, and McKie (2006); Upward Bound—Seftor, Mamun, and Schirm (2009). One of the studies finding no detectable effects on college access or enrollment outcomes found mixed effects on high school academic outcomes, which the panel deemed not relevant for this recommendation.

224. QOP—Schirm, Stuart, and McKie (2006).

225. EXCEL—Bergin, Cooks, and Bergin (2007); Career Beginnings—Cave and Quint (1990); Talent Search—Constantine et al. (2006); Sponsor-a-Scholar—Johnson (1998); QOP—Schirm, Stuart, and McKie (2006); Upward Bound—Seftor, Mamun, and Schirm (2009).

226. Career Beginnings—Cave and Quint (1990); Talent Search—Constantine et al. (2006); Sponsor-a-Scholar—Johnson (1998).

227. EXCEL—Bergin, Cooks, and Bergin (2007); QOP—Schirm, Stuart, and McKie (2006); Upward Bound—Seftor, Mamun, and Schirm (2009). One of the studies finding no detectable effects on college access or enrollment outcomes found mixed effects on high school academic outcomes, which the panel deemed not relevant for this recommendation.

228. Calahan et al. (2004).

229. Ibid.

230. Ibid.

231. Constantine et al. (2006).

The Sponsor-a-Scholar program in Philadelphia had an academic coordinator who set up college entrance exam preparation classes, planned college visits, and held workshops on selecting a college and preparing for the challenges of college.[232] In addition, mentors were expected to provide one-on-one assistance with the college admissions process. The author reports that the program had a significant positive impact on a broad measure of college preparation activities that summed up the number of preparation activities in which students participated.

There is limited information on the college preparation activities offered by the seven Career Beginnings sites that were studied. The random assignment study found that sites offered workshops or classes on taking college entrance exams and classes on completing college admissions forms.[233] Career Beginnings had a positive impact on college enrollment; the direct effect of the college preparation activities cannot be determined, however, since the extent of these college preparation activities was not clear.

Upward Bound projects helped students prepare for college entrance exams (PSAT and SAT) and provided assistance with college applications and financial aid forms.[234] The program also provided opportunities for students to visit colleges, and many sites encouraged students to live on campus for the summer academic course sessions. Although there was limited information on the quality or intensity of these services, they are a common part of program services. Upward Bound had no effects on enrollment or persistence in two- or four-year colleges for program participants, but it had a significant impact on four-year college attendance for students with low academic expectations.

232. Johnson (1998).

233. Cave and Quint (1990).

234. Seftor, Mamun, and Schirm (2009).

An implementation study of the QOP sites suggests several types of activities to assist students in completing the steps for college entry. Case managers encouraged students to take college entrance exams and in some sites paid the exam registration fees.[235] Several QOP sites also helped participants prepare for entrance exams by offering tutoring or purchasing training software. A few sites also purchased books and CD-ROMs that provided enrollees with test-taking tips and sample examinations. Case managers provided assistance in completing college applications and organized college visits for students. The large-scale random controlled trial of QOP found no significant effects on college enrollment. Perhaps most relevant to this recommendation, study authors also noted that QOP's policy of having a case manager on duty for a large number of hours weekly was somewhat unrealistic and therefore not always implemented according to the QOP model.

EXCEL staff encouraged and guided students through the college application process. The EXCEL program also held workshops on campus and allowed students to live in college dormitories during the summer sessions. The summer institutes provided writing instruction to assist students in writing essays. A small random assignment study of EXCEL in one Midwestern city found no detectable effects on college enrollment the fall after high school graduation.[236]

Three additional programs had studies that potentially met standards[237] or did not meet standards.[238] The panel judged the practices discussed in the studies to

235. Maxfield et al. (2003).

236. Bergin, Cooks, and Bergin (2007).

237. Puente—Gandara (2002); AVID—Watt et al. (2006).

238. I Have a Dream—Kahne and Bailey (1999); I Have a Dream—Kuboyama (2000); I Have a Dream—McGrath and Hayman (1997).

be similar to practices implemented in programs with studies that met standards with or without reservations and included practices described in these studies as supplemental evidence of a practice.

A study of the AVID program potentially meets standards but could not be rated because there was insufficient information to assess baseline equivalence. Students participating in AVID were given extra coaching on how to write statements of purpose and how to fill out college applications and financial aid forms, and they were reminded about test and application deadlines. At one site, to familiarize students with college catalogs and to help them choose an appropriate college, students received a handout called "Choosing Your College" that contained a checklist of information typically found in college catalogs and were instructed to fill in the information for a particular college according to the assigned checklist.[239] The study that potentially met standards did not measure the program's effect on college enrollment but reported a positive effect on school-level achievement. However, the study did not provide information on the statistical significance of this finding.

Counselors from the Puente program arrange college visits, including overnight trips, for students.[240] Parents often are invited on these visits to make them more comfortable with the college environment. The program also introduces students to representatives from Latino student groups on campus. A study of the Puente program potentially meets standards and reported a positive impact on four-year college enrollment. A national study of GEAR UP that potentially meets standards found that college visits were common across all of the sites and that the number of college visits offered grew over time.[241] The study focused on program implementation in the 7th and 8th grades, but it did not provide sufficient information to assess baseline equivalence. The initial findings described the program's effect on students' and parents' education expectations and knowledge of postsecondary opportunities.

In the I Have a Dream program, sites worked individually with and monitored each participant's college application process. One site hired a college counselor from a prestigious private school to meet with each participant, and another site assigned an AmeriCorps member to focus entirely on this process.[242] There were no studies of the I Have a Dream program that met standards.

Recommendation 5. Increase families' financial awareness, and help students apply for financial aid

Level of evidence: Moderate

The panel judged the level of evidence for this recommendation as *moderate* because there is evidence that the recommended practices increased the financial assistance application rate and the college enrollment rate. Two programs with studies meeting standards with reservations informed students about financial aid opportunities and provided hands-on assistance in completing financial aid applications.[243] Both of these programs had a positive impact on financial aid application and college enrollment. Although five other programs with studies meeting standards with and without reservations provided financial aid services, the level and intensity of

239. Mehan (1996); Watt et al. (2006).

240. Gandara (2004); Grubb, Lara, and Valdez (2002).

241. Standing et al. (2008).

242. Kahne and Bailey (1999); Kuboyama (2000); McGrath and Hayman (1997).

243. FAFSA Experiment—Bettinger et al. (2009); Talent Search—Constantine et al. (2006).

these services were often unclear.[244] Two of these studies measured financial aid outcomes and found no impact,[245] and the findings for college enrollment were mixed across these five studies. Since the two programs that closely correspond with the panel's recommendation had a positive impact on financial aid application and college enrollment, the panel assigned a moderate level of evidence.

Summary of evidence

Seven programs with studies meeting standards offered some form of financial aid assistance, often informing students and parents about financial aid or helping students with financial aid applications.[246] The types of practices recommended by the panel formed a major part of Talent Search and the FAFSA Experiment, and both had a significant impact on application for financial aid and college enrollment.[247] Five other programs offered financial aid assistance, but the studies of these programs did not provide sufficient information on the type and frequency of these services. Among these five programs, two had studies measuring financial aid outcomes and found no impact,[248] two found a positive impact on college enrollment,[249] and three found no impact on enrollment.[250]

The FAFSA Experiment compared two interventions designed to improve the financial aid and college enrollment rates. The main intervention consisted of an H&R Block tax professional using a family's income tax return and a structured protocol of questions to fill out the FAFSA, offering to submit the FAFSA form free of charge, and providing information on financial aid eligibility for local colleges. A second intervention offered families information on their financial aid eligibility based on their tax return without assisting them in completing or submitting the FAFSA. The main intervention had a significant positive impact on financial aid application and college enrollment for the dependent participants, who were mostly high school seniors. The information-only intervention did not have an impact on either outcome.

A primary goal of Talent Search is to inform students about the availability of financial aid, provide financial aid counseling, and assist students in completing the FAFSA. Almost all Talent Search projects report providing these services, and both students and project staff emphasize the importance of financial aid assistance.[251] Programs often provide general information that raises awareness of financial aid in the middle school and early high school grades and then offer counseling and one-on-one support in filling out the FAFSA in the junior and senior years. A quasi-experimental study of Talent Search students in Florida, Indiana, and Texas found that the program had a substantial impact on the financial aid application rate and postsec-

244. EXCEL—Bergin, Cooks, and Bergin (2007); Career Beginnings—Cave and Quint (1990); Sponsor-a-Scholar—Johnson (1998); QOP—Schirm, Stuart, and McKie (2006); Upward Bound—Seftor, Mamun, and Schirm (2009).

245. Career Beginnings—Cave and Quint (1990); Upward Bound—Seftor, Mamun, and Schirm (2009).

246. EXCEL—Bergin, Cooks, and Bergin (2007); FAFSA Experiment—Bettinger et al. (2009); Career Beginnings—Cave and Quint (1990); Talent Search—Constantine et al. (2006); Sponsor-a-Scholar—Johnson (1998); QOP—Schirm, Stuart, and McKie (2006); Upward Bound—Seftor, Mamun, and Schirm (2009).

247. FAFSA Experiment—Bettinger et al. (2009); Talent Search—Constantine et al. (2006).

248. Career Beginnings—Cave and Quint (1990); Upward Bound—Seftor, Mamun, and Schirm (2009).

249. Career Beginnings—Cave and Quint (1990); Sponsor-a-Scholar—Johnson (1998).

250. EXCEL—Bergin, Cooks, and Bergin (2007); QOP—Schirm, Stuart, and McKie (2006); Upward Bound—Seftor, Mamun, and Schirm (2009).

251. Calahan et al. (2004).

ondary enrollment.[252] The authors found effect sizes between 0.34 and 0.67 for the financial aid application rate, and persistence of these effects when controlling for high school graduation.

Five other programs with studies meeting standards provided assistance with the financial aid process, but detailed information on their financial aid practices was lacking.[253]

Although Upward Bound focuses on providing academic coursework during the school year and summer, the program offers several nonacademic services as well. An implementation study of Upward Bound found that most sites provide assistance with financial aid, but the intensity of these services varied widely.[254] Some sites offered a workshop on financial aid, whereas others met with students and parents on multiple occasions to assist with the financial aid application process.[255] The prevalence of one-on-one financial aid counseling could not be determined from the available studies. The random assignment study of the program did not find a significant impact on financial aid application or receipt, or on postsecondary enrollment or attainment.[256] The study did report a significant impact on financial aid application for students who participated in the program for a longer period of time.

The implementation of financial aid assistance in the Career Beginnings program is not clear from the seven sites included in the study meeting standards.[257] The study reports that one site enlisted the help of a financial aid officer and another held classes on completing financial aid forms, although there is limited information to assess the prevalence and quality of financial aid services. A random assignment study of Career Beginnings found that the program did not have a significant impact on scholarship receipt or student loan usage, but it did increase college enrollment (i.e., enrollment in a two- or four-year college).

Sponsor-a-Scholar mentors and QOP case managers assisted students with financial aid applications, and both programs held workshops on the financial aid process.[258] The studies of both programs did not provide enough detail to determine the frequency or quality of these services, and neither study measured financial aid outcomes. As described, Sponsor-a-Scholar had a positive impact on college enrollment, and QOP had no impact on college enrollment, retention, or degree attainment. Although a study of EXCEL notes that the program assisted parents with financial aid forms, there is no additional information to determine the financial aid assistance provided through the program.[259] A relatively small random assignment study of about 70 students found that the program did not have a positive impact on college enrollment.[260]

The panel examined two programs with studies that potentially meet standards for practices related to engaging parents. Parent involvement formed a major part of the Puente program (described in recommendation 3). The program has parents attend interviews along with students, hosts

252. Constantine et al. (2006). The study found differences in the financial aid application rate between participants and nonparticipants of 14, 17, and 28 percentage points in Indiana, Florida, and Texas, respectively.

253. EXCEL—Bergin, Cooks, and Bergin (2007); Career Beginnings—Cave and Quint (1990); Sponsor-a-Scholar—Johnson (1998); QOP—Schirm, Stuart, and McKie (2006); Upward Bound—Seftor, Mamun, and Schirm (2009).

254. Moore et al. (1997).

255. Ibid.

256. Seftor, Mamun, and Schirm (2009).

257. Cave and Quint (1990).

258. Johnson (1998); Schirm, Stuart, and McKie (2006).

259. Bergin, Cooks, and Bergin (2007).

260. Ibid.

informal parent nights, and holds one-on-one parent meetings with a Puente counselor.[261] Parents receive financial aid information and counseling. A national study of GEAR UP that potentially meets standards created a matched comparison group of GEAR UP and non–GEAR UP schools, but it did not provide sufficient information to assess equivalence of the analysis sample. As part of the study, the authors found that sites that effectively engaged parents used two practices: 9- to 10-week parent institutes and individual counseling sessions for parents and children.[262] The institutes consisted of a series of workshops to inform parents about how to help their children prepare for college.

The panel considered practices from three other programs that provided financial aid information or assistance, but it did not have a study that met standards. The Baltimore College Bound program conducted presentations on financial aid for students in the 9th and 10th grades and provided individual assistance with financial aid and college applications in the 11th and 12th grades. A quasi-experimental study of the program compared participants and nonparticipants but did not include an indicator of socioeconomic status to match students. The Kids2College program provided financial aid information to middle school students as part of its college awareness program that helped prepare students for college. A study of the program examined the pre- and post-program outcomes of participants, but it did not have a comparison group of students.[263] The Neighborhood Academic Initiative (NAI) coordinates a Family Development Institute that includes information on financial aid and works with a financial aid officer from the University of Southern California to assist students in completing financial aid application forms.[264] The panel did not identify any comparison group studies of the NAI.

261. Grubb, Lara, and Valdez (2002).
262. Standing et al. (2008).
263. Cunningham, Erisman, and Looney (2007).
264. Tierney and Jun (2001).

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EVALUATION OF READ RIGHT IN OMAHA MIDDLE AND HIGH SCHOOLS 2009–2010

June 2010

education northwest

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EXECUTIVE SUMMARY

Read Right is a reading intervention designed for students of all ages who struggle with reading. Based on constructivist theory, Read Right assumes that the purpose of reading is to construct meaning and that learning to read is an implicit, rather than an explicit, process. When Read Right is used to supplement a school's English language arts program, it is typically a class during the school day with a ratio of no more than five students per tutor. Students cycle through routines in "excellent reading," "coached reading," and "critical thinking," repeating the same routines as they move through more advanced materials. Tutors play specific roles during each routine, following procedures outlined in the Read Right tutor manual.

The ultimate goals of Read Right are to improve student reading comprehension and motivation to read. Since spring semester 2008, the Sherwood Foundation has funded the implementation of Read Right in six middle and three high schools in Omaha Public Schools (OPS). In OPS, students who are significantly behind in reading attend Read Right during the school day as a class in lieu of an elective or a study hall. In the Read Right classes, tutors work with groups of up to five students. Each student works at his or her own pace reading leveled trade paperbacks and participating in several different reading activities. All students also attend their regular English language arts class.

In February 2009, the Sherwood Foundation hired Education Northwest, a private non-profit, to evaluate Read Right in nine Omaha middle and high schools that received Sherwood Foundation funding to implement Read Right. This final evaluation report focuses on both outcomes and implementation. Outcomes included student achievement in reading and student motivation to read. Achievement was examined for students overall, as well as for students in particular subgroups. Implementation included observed implementation in Omaha classrooms as well as key participants' (tutors,' principals,' and students') perceptions of implementation. Major findings are outlined below and detailed in the full report.

Student Achievement Outcomes

Overall, Read Right had a significant positive effect on students' reading comprehension, as shown by a rigorous experimental study within four of the nine schools in the evaluation. In this experimental study, students were randomly assigned to either the treatment group (Read Right) or to the control group (a study hall or elective). All students also participated in their regular English language arts class. Students in Read Right classes outperformed those in the control group on the Gates-MacGinitie Reading Comprehension Test, even when controlling for prior student achievement. Because of the experimental design of the study, the achievement of Read Right students in OPS can be attributed to the Read Right intervention.

At the school level, analyses in three of the four schools showed that the treatment group outperformed the control group on the posttest, although this effect did not reach statistical significance in one of the three schools. In the fourth school, the control group outperformed the treatment group, although this difference was not statistically significant. The evaluation was not able to determine exact causes for differences among schools; however, further

examination of the data suggested that differences may be due to the larger numbers of Latino and English language learner (ELL) students—who responded less well to Read Right and were concentrated in two of the schools—and lower numbers of total tutoring hours in these two schools.

Subgroup analyses showed that African American and white students in Read Right outperformed African American and white students in the control group. The difference in achievement was statistically significant for African Americans but not for whites, possibly due to the small number of white students in the study. Latino and special education students in Read Right also outperformed their counterparts in the control group, but the differences were not statistically significant. For ELLs, the control group outperformed the treatment group, although this difference was also not statistically significant.

Analysis of posttest data and tutoring records revealed a significant correlation between students' total number of tutoring hours and students' posttest scores. Specifically, more hours of tutoring were associated with higher posttest scores.

Student Motivation Outcomes

After participating in Read Right, a significantly larger proportion of students reported they read for fun almost every day, compared to students in the control group. Read Right students said they read for pleasure in general, and many had specific reading interests, such as sports articles, horror stories, or romances. However, the evaluation found no significant differences in the percentages of Read Right and non-Read Right students who reported talking with friends and family frequently about books or who aspired to higher education.

The evaluation found no significant changes in motivation to read that could be attributed to Read Right. Many Read Right students, however, believed that Read Right increased their motivation to read. Most principals and tutors agreed, basing their perceptions on talking with or observing students.

Despite the fact that most tutors said students were typically motivated by Read Right, most also reported that there were some students who just didn't like reading even after participating in Read Right. Student focus groups mirrored these findings: about a fourth of students did not believe Read Right was motivating.

Classroom Implementation

Read Right was implemented as outlined in the Read Right tutor manual in the majority of the 33 classroom observations conducted for this evaluation. Students, on average, spent very little time on off-task behavior or waiting for the tutor. Instead, most students typically spent most of their time appropriately engaged in Read Right activities, although a few spent more time on preparation than seemed warranted in observers' views. Observers rarely disagreed with tutors' judgments of a student's performance or with the corrections tutors made to a student's reading.

Most tutors said they followed the tutor manual most of the time, although many principals and some tutors said implementing Read Right with high fidelity was challenging. When tutors reported they did not follow the manual, the deviations they described were minor, such as phrasing a comment to a student as a question when in the manual the comment was supposed to be a statement.

Tutor, Principal, and Student Views of Read Right

While tutors generally had positive views of Read Right, their work was not without challenges. Most tutors said they enjoyed their work, felt effective at their jobs, and were respected at their schools. Those who enjoyed being tutors were more likely to plan on continuing in that role for a longer period of time. Many tutors appreciated the structure of Read Right, and perceived that this was particularly effective for struggling students. They also cited Read Right's low student-teacher ratio and accessible curricular materials as particularly important to helping students succeed. Challenges for some tutors included following the tutor manual all the time and working with unmotivated students. Not all used Read Right's disengage protocol as intended when working with these students.

Read Right training was also viewed positively, although tutors did express some concerns. For example, Read Right training was frequently perceived as high quality, intense, and effective. Almost all tutors felt it adequately prepared them to work with students. When tutors had questions after training, they generally felt they were able to get the answers they needed. Trainers were largely seen as knowledgeable and encouraging. However, tutors expressed some concerns about what they perceived as the inconsistency of trainers' interpretations of Read Right. Variations typically hinged on degrees of adherence to the tutoring manual. Tutors also reported inconsistency in the quality of trainers' interactions with school staff.

Tutors, principals, and students all indicated that Read Right was mostly implemented as intended and was generally effective. In three areas, however, implementation varied a good deal: placement of students, movement of students within the program's color levels, and student graduation from Read Right. Placement decisions were made in slightly different ways at different schools. All decisions involved test score data. Beyond testing, teacher recommendations, grades, ELL status, special education status, attendance records, and behavior issues were also used as criteria for placement in Read Right. Decisions about movement through color levels and graduation from Read Right also varied. While many tutors said they followed the Read Right protocols for moving students on to new color levels and/or graduating them, there was some confusion about when to do so and not all tutors were consistent.

Recommendations

This report includes recommendations in four areas.

1. OPS should continue Read Right and perhaps expand the program, but this expansion should be done cautiously.
2. OPS should continue to monitor the achievement of Latino and ELL students and the total number of tutoring hours students receive.
3. Read Right should review consistency across trainers, and OPS should create a constructive way for tutors to relay any concerns or questions about training.
4. Read Right should retrain tutors on moving students through color levels and graduating students, and OPS should ask tutors to make team decisions about these issues until tutor decisions become more consistent.

These recommendations are detailed in the final chapter of the full report.

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CHAPTER 1: INTRODUCTION

With approximately 48,000 students, Omaha Public Schools (OPS) is the largest school district in Nebraska. The student population is diverse. Almost a third of students are African American, a fourth of students are Latino, and two-fifths are white. More than half of students in the district are eligible for free or reduced-price lunch, an indicator of poverty. Like many other urban districts, OPS has a high proportion of adolescent students who struggle in reading. In the 2008–2009 school year, more than half of middle and high school students in the district scored below the national average on standardized reading tests: 59 percent of fifth- through eighth-graders scored below average on the California Achievement Test, and 61 percent of ninth- through 12th-graders scored below average on PLAN, a standardized test created by American College Testing (ACT).

Since January 2008, OPS has been addressing middle and high school students' reading difficulties by using Read Right as a supplemental reading intervention for students who read significantly below grade level. These struggling readers receive Read Right in addition to their regular English language arts class. Funding from the Sherwood Foundation provided Read Right to nine middle and high schools in OPS in 2009–2010. (The district also used Title I monies to fund Read Right in some of its elementary schools.)

In 2009, the Sherwood Foundation hired Education Northwest to conduct an external evaluation of Read Right in OPS middle and high schools. The purpose of the evaluation was to determine the effect Read Right had on student achievement.

The Read Right Intervention

Developed in 1991, Read Right is a reading intervention program designed to improve the reading skills of students who read significantly below grade level. Read Right's approach is based on constructivist theory (Piaget, 1950); Read Right assumes that the purpose of reading is to construct meaning and that learning to read is an implicit, rather than an explicit, process. Read Right's approach is also based on research that shows that readers of various ages focus on meaning as they visually sample (rather than decode) words and text (e.g., Seidenberg & McClelland, 1989; Stevens, & Grainger 2003; Vandenberghe, Nobre, & Price, 2002). Therefore, in the Read Right classroom, students follow along as they hear text read fluently and then practice reading and rereading text until they can comfortably read the text with a natural pace and intonation. Read Right does not teach vocabulary or phonics explicitly. Instead, the meaning and pronunciation of words are taught only within the context of understanding the text. Some explicit comprehension is practiced, but this practice is done within weekly student-driven lessons in which the adults act as guides while the students articulate their understandings of the text (Tadlock & Stone, 2005).

In OPS, the program is implemented during the school day. Middle and high school students take Read Right as a class in lieu of an elective or a study hall. Students are taught in mixed-grade classrooms and read trade paperbacks matched to their reading levels. These books were purchased by the district especially for Read Right, but all are widely available commercially and are often found in school libraries and community bookstores. The trade books are age appropriate and are a mix of fiction and non-fiction. Classes typically include one certified teacher, three or four para-professionals, and no more than five students per adult.

Read Right has four activities: excellent reading, coached reading, critical thinking, and independent reading. Each of these activities is described in more detail below. The weekly schedule for these activities is depicted in Figure 1-1.Each week on Monday through Thursday all students participate in "excellent reading" and "coached reading."

Excellent reading is an activity in which a student repeatedly alternates listening to and reading a passage in order to read the passage "excellently"(i.e., comfortably, with no text deviations and with natural pace, tones, and flow). Students who are at about the fourth-grade reading level or above read trade books that have been recorded in short segments on MP3 players. When the student thinks he or she can read the passage excellently, the student indicates to the tutor that he or she is ready to read the passage aloud and "be judged." After reading, the student ideally determines whether the reading was excellent, but tutors sometimes assist with this judgment. The passage must be read flawlessly to be deemed "excellent." If the student reads aloud excellently, the student moves on to the next segment of text. If not, the student continues to practice or, occasionally, the tutor may assign an easier text. If the student reads below the fourth-grade level, excellent reading is done with the tutor. In other words, as with the MP3 player, the tutor models reading the passage for the student and everything else about excellent reading remains the same.

In coached reading, the student reads aloud to the tutor. All but the lowest level students read text that is new to them. The lowest readers first listen to the text read aloud by the tutor. As the student reads, the tutor has short scripted ways of intervening when the student has difficulties. For example, if the student deviates from the text, the tutor says, "That doesn't work. Read it again." On

Figure 1-1

S	M	T	W	T	F	S
No School	**Excellent Reading** • Students practice a passage repeatedly "cycling" (Some use MP3 players) • Students request that their reading be judged • Depending on their reading, students move on or continue cycling				**Critical Thinking** • Students read in a group and answer questions	**No School**
	Coached Reading • Tutor and student practice reading together one-on-one • Tutor makes corrections as appropriate					

Independent Reading

- Students read independently outside the tutoring session
- Tutors may also ask a student to do independent reading as appropriate during the tutoring session (e.g., while the tutor gathers new materials for a student who has finished a book)

Weekly Read Right Activities

a student's third unsuccessful attempt with the same passage, the tutor corrects the student saying, "You read … The text says … Read it again."

When the tutor's students are all using MP3 players, the tutor focuses primarily on the student(s) engaged in coached reading but periodically shifts his or her attention to a student who is working on excellent reading. However, if the group has students at the lower levels, both coached and excellent reading must be done primarily with the tutor. Ideally, all the students working with a tutor alternate their time on coached and excellent reading so that all students in the group get about the same amount of coached reading during the week: typically at least two, 10-minute sessions per week.

On Fridays, students who are reading on at least the fourth-grade level participate in critical thinking activities. During critical thinking, a group of students at similar skill levels read identical passages silently. After reading, the students silently answer a series of multiple choice comprehension questions. If a student finishes early, that student reads independently. When all students have read and answered questions, the group of students discusses each question. Together, they decide on the correct answer to each question. The tutor can guide the discussion by asking questions, but should not provide students with the correct answer. Even if the students collectively decide on an incorrect answer, the tutor should not correct them.

Independent reading outside of the tutoring time is the responsibility of each student. Students check books out of the Read Right collection to read at home. Independent reading is also an activity that takes place when students are waiting for the next activity to begin. For example, in critical thinking if a student finishes answering comprehension questions before his or her peers, the student will read independently. Tutors track students' reports of the time they spend on independent reading, but students have free choice of reading material within their reading level.

The External Evaluation

Education Northwest's evaluation focused on student outcomes as well as the implementation of Read Right. The evaluation had four overarching questions:

1. What effect has Read Right had on student achievement?
2. What effect has Read Right had on student motivation?
3. Does the Read Right program have different effects on different groups of students?
4. How effectively has Read Right been implemented and how can it be improved?

To examine student outcomes, we used an experimental study in four schools. Implementation was examined in all nine schools. All questions were addressed through mixed methods. Chapter 2 describes methods and data sources in more detail.

Organization of the Report

This report is organized into seven chapters. Chapter 2 provides details about the evaluation data and methods used in the analyses. Each subsequent chapter of the evaluation addresses one or more of the specific evaluation questions in Table 2. Chapter 3 focuses on student reading achievement as measured by the Gates-MacGinitie Reading Test for students in the four experimental study schools. It addresses the first question of the study about student achievement as well as the third question of the study about how student achievement varies by different groups of students. Chapter 4 examines the second question of the study about student motivation. Chapter 5 describes tutor and student views of the implementation of Read Right. It focuses on the fourth question of the study. Chapter 6 of the report gives an in-depth description of Read Right in the classroom and also focuses on the fourth study question about implementation. Chapter 7 summarizes the successes and challenges described in this report and provides recommendations.

CHAPTER 2: METHODS

This evaluation collected data about both the implementation and the outcomes of Read Right in Omaha. The evaluators relied on information from a variety of sources in order to provide an overview of the program. Because of the logistical challenges in implementing an experimental study, we limited the experimental study to four schools that had been implementing Read Right the longest: Central High School, Monroe Middle School, Norris Middle School, and South High School. We studied implementation in all nine of the schools receiving Sherwood Foundation funding in 2009–2010. Table 2-1 shows the specific evaluation questions and data sources used to address the evaluation questions. The data sources and the methods used to analyze each data source are described in more detail below.

The Gates-MacGinitie

To measure students' reading comprehension skills, we used the Gates-MacGinitie Reading Comprehension Test, level 7/9, which is a group-administered, nationally normed test of reading comprehension. The Gates-MacGinitie was well-suited to the purposes of this study for several reasons. First, it had already been used by Read Right tutors as a formative assessment; therefore, tutors already knew how to administer it. Furthermore, it is well correlated with other assessments that are used in the district to assess students' reading skills—the Criterion Reference Test,

Table 2-1
Evaluation Questions and Data Sources

	Gates-MacGinitie pre/post	Student surveys	Read Right Tutor Surveys	Interviews	Student Focus Groups	Observations
1. How effectively has Read Right been implemented and how can it be improved?		Experimental Schools	All Schools	All Schools	All Schools	All Schools
2. What effect has Read Right had on student achievement?	Experimental Schools					
3. What effect has Read Right had on student motivation?		Experimental Schools	All Schools	All Schools	All Schools	
4. Does the Read Right program have different effects on different groups of students?	Experimental Schools	Experimental Schools		All Schools		

Standard 1, and the comprehension portion of the California Achievement Test-5 (Scott, Burke, & Deussen, 2009). In addition, it has two forms (forms S and T), which makes it appropriate for use in studies with pre- and posttesting.

In this assessment, students read 11 passages drawn from a range of fiction and non-fiction texts across multiple content areas and answer questions that require understanding of both explicit and implicit information in the passages.

School selection. The schools in this study represent a purposefully selected sample rather than a random sample of all schools implementing Read Right in Omaha. Education Northwest, in consultation with OPS, selected South, Central, Norris, and Monroe to participate in the study for a number of reasons. First, these four schools had already implemented Read Right in the previous school year and were expected to have strong implementation. Second, the schools represented a variety of grade levels: South and Central were high schools while Norris and Monroe were middle schools. The schools also served diverse student populations. Norris and South had large percentages of English language learners (ELLs) and Latinos, while Central and Monroe had large percentages of African Americans (Table 2-2).

Student sample. At each of the four selected schools, a pool of students eligible for Read Right was identified by the school. In order to make the study as close as possible to the typical administration of Read Right in OPS, the district's typical procedures for identifying eligible students were not changed. To be eligible for Read Right, students had to be at least two grade levels behind in reading according to state reading tests, and/or be an ELL and/or a special education student. For the purposes of the study, eligible students could not have had 10 or more hours of Read Right tutoring in the past. Schools were asked to identify at least 120 students for the pool. Eligible students were randomly assigned by Education Northwest to either the treatment or control groups in June 2009. The experimental study continued throughout the fall semester of 2009.

Students in the study represented a wide variety of demographic characteristics. As shown in Table 2-3, compared to other students in the district, larger percentages of students in the study were non-white, low income, special education, and ELLs.

The demographics of students in the experimental study remained stable over time: demographics for students assigned to Read Right—those pretested and those posttested—did not differ a great deal from those originally selected to participate in the study. The one exception was that the percentage of special education students selected for the study was greater than the percentage pretested. This was because OPS identified several special

Table 2-2
Overall Student Ethnicity at Schools in the Experimental Study

School	African American	Asian	Latino / Hispanic	Native American	White	English Language Learner
Central	38%	2%	14%	2%	44%	3%
Monroe	61%	3%	6%	2%	28%	3%
Norris	10%	2%	58%	2%	29%	15%
South	17%	4%	59%	1%	19%	17%

[Source: Omaha Public Schools, *Official 2009-2010 Membership Data*]

Table 2-3
Student Demographics for OPS and Students in the Experimental Study

	OPS	Selected Students	Pretested Students	Posttested Students	Control Group Posttest	Treatment Group Posttest*
Total	48,075	481	450	424	208	216
African American	31%	39%	38%	37%	37%	36%
Asian	2%	1%	1%	1%	1%	1%
Latino/Hispanic	25%	38%	40%	41%	41%	41%
Native American	2%	2%	2%	1%	1%	2%
White	40%	20%	19%	20%	20%	20%
Special Education	16%	29%	25%	25%	24%	26%
English Language Learner	13%	18%	17%	17%	16%	18%
Free and Reduced-Price Lunch	62%	80%	79%	80%	81%	79%

*Attrition ranged from 0 to 10 percent by school with an average of 6 percent. More information about attrition is included in the appendix.

education students as eligible for the program who were not actually eligible due to the nature of their disabilities or the requirements of their Individual Educational Programs (IEPs). The treatment and control groups also did not differ substantially in their demographics.

Read Right provides individualized instruction based on each student's reading level rather than on his or her grade level, and this study included students from a range of grade levels. Students in the treatment group in the two middle schools were seventh- and eighth-graders who were served in mixed-grade classrooms. Students in the two high schools were predominately ninth-graders, since these schools focused the intervention on incoming students. The exception was the inclusion of three 11th-graders and one 10th-grader at Central. Of these students, one 11th-grader was in the control group while the rest were in the treatment group. Students in the high schools were also served in mixed-grade classrooms. Student grade levels are shown in Table 2-4.

Data collection. Tutors administered the Gates-MacGinitie Reading Comprehension Test, level 7/9, form S during the first three weeks of the school year. The posttest (form T) was also administered by Read Right tutors. The bulk of posttest administration occurred during the last three weeks of the fall semester. In addition, 20 tests were administered in January of the following year to students who were absent during the

Table 2-4
Students' Grade Levels by School in the Experimental Study

School	7th Grade	8th Grade	9th Grade	10th Grade	11th Grade
School 1	--	--	89	1	3
School 2	39	81	--	--	--
School 3	93	24	--	--	--
School 4	--	--	94	--	--

Table 2-5
Data Collection for Gates-MacGinitie Reading Comprehension Test

	Form of Test	Testing Window
Pretest	S	First three weeks of fall semester 2009
Posttest	T	Last 3 weeks of fall semester 2009 (with 20 tests in January 2010)

main testing window: 12 of 20 were in the control group and 8 of 20 were in the treatment group. Data collection is depicted in Table 2-5.

The Gates-MacGinitie Reading Comprehension Test was group administered to the majority of treatment students during their Read Right class and to the majority of control students, who were pulled out of their study halls or electives for a group administration of the test by a Read Right tutor. Both treatment and control group students who took the test outside of the primary administration window were tested individually or in small groups by Read Right tutors.

All test materials were kept confidential by OPS staff members and Education Northwest researchers. In both the pre- and posttest, student tests were scored by Riverside Publishing and uploaded to a secure data management system that could be accessed only by Education Northwest, OPS, and Read Right.

Data Analysis. The extended scale score on the Gates-MacGinitie posttest was used as the outcome measure, because this score allows progress in reading to be tracked over time and across grades on a single, continuous scale, and is therefore useful for statistical analyses (MacGinitie, MacGinitie, Maria, & Dreyer, 2002). In addition, several recent research studies used this form of the Gates-MacGinitie posttest as an outcome measure (Guthrie et al., 2009; Ryder, Burton, & Silberg, 2006).

The primary predictor variable of interest was whether the students were in the control or treatment group, coded as 0 (control) or 1 (treatment).

For the first question of the study, which examined the overall effects of Read Right, a fixed-effects linear regression was used. The extended scale score on the Gates-MacGinitie posttest was the outcome variable, and the extended scale score on the Gates-MacGinitie pretest was used as a covariate to control for students' prior achievement in reading. Schools were dummy coded and entered as covariates to account for possible differences by school. Four additional regressions were used to investigate whether Read Right had different effects at different schools.

The evaluation also examined how Read Right affected students in particular subgroups. First, four separate linear regressions examined the treatment effect by school. Second, five linear regressions determined how treatment varied by student subgroup—African Americans, Latinos, whites, special education students, and ELLs—while also accounting for differences by school. Third, regression including only treatment students explored how the treatment effect varied by the number of hours of tutoring students reported, a continuous variable. This regression also accounted for difference by school. All equations for these analyses are in Appendix A.

Student Surveys

Education Northwest created student surveys based on the stated motivation aims of Read Right and OPS's implementation of Read Right by modifying items from other valid and reliable students surveys as well as creating a number of unique items particularly for Read Right. The student survey had four sections and is shown Appendix B.

The first section collected students' names and unique ID numbers. This allowed Education Northwest to connect each student survey to that student's demographic information as provided by OPS.

The second section included three items. These items measured self-reported reading frequency, discussion of reading, and educational goals. The first two were taken verbatim from the National Assessment of Educational Progress, 2007 Reading Student Background Questionnaire, Grade 8. The third was from Gaining Early Awareness and Readiness for Undergraduate Programs (GEAR UP).

The third section, based on Meece & Miller (2001), measured students' goals for reading: mastery goals, performance goals, and work avoidance goals. Students with mastery goals report they want to read in order to learn things. Students with performance goals report they want to read in order to get good grades or do better than their peers. Students with work avoidance goals report they do not want to read and instead want to avoid doing any difficult reading work. While both mastery and performance goals have been associated with higher student achievement, only mastery goals have been associated with persistence in the face of difficulty.

The fourth section of the survey was given only on the postsurvey to students who received the treatment. This section asked questions specifically about the students' experience of Read Right. These items were developed by Education Northwest based on informal interviews with OPS staff participating in Read Right.

Participants. Students participating in the survey came from the four experimental schools described in the section on the Gates-MacGinitie. The return rate for the survey, however, was slightly lower than the return rate on the Gates-MacGinitie. The demographics for these students are described in Table 2-6.

Table 2-6
Student Demographics for OPS and Students in the Experimental Study, Student Survey

	OPS	Selected Students	Pre-Surveyed Students	Post-Surveyed Students	Control Group Post Survey	Treatment Group Post Survey*
Total	48,075	481	458	397	194	203
African American	31%	39%	37%	38%	38%	37%
Asian	2%	1%	1%	1%	1%	2%
Latino/Hispanic	25%	38%	41%	40%	40%	40%
Native American	2%	2%	1%	2%	1%	2%
White	40%	20%	20%	20%	20%	19%
Special Education	16%	29%	25%	24%	25%	24%
English Language Learner	13%	18%	17%	17%	16%	18%
Free or Reduced-Price Lunch	62%	80%	81%	80%	81%	79%

*Attrition ranged from 7 to 21 percent by school with an average of 13 percent.

Data Collection. Surveys were administered after the Gates-MacGinitie using the schedule described in the section of this report about the Gates-MacGinitie. Tutors read the survey to students, but students were allowed to read ahead and answer questions at their own pace if they wanted.

All surveys were kept confidential by OPS staff members and Education Northwest researchers. Both the pre- and postsurveys were scored by a scantron at Education Northwest and could be accessed only by Education Northwest.

Data Analysis. The items measuring self-reported reading frequency, discussion of reading, and educational goals were analyzed first using descriptive statistics. Then, pre- and postsurvey responses for treatment and control group students were compared using chi squares.

For the items measuring students' reading goals, we used confirmatory factor analysis to determine whether the items fell into the three categories found in other research: mastery goals, performance goals, and work avoidance goals (Meece & Miller, 2001). We then examined the internal reliability of the items using Cronbach's alpha.[1] Next, items for each type of goal were averaged across individual students to provide a single score for each student in each of the three categories. Finally, we used linear regression to compare postsurvey responses of treatment and control group students while controlling for their presurvey responses and students' schools.

The last section of the student survey, which was given only on the postsurvey to students in the treatment group, was analyzed using descriptive statistics. These statistics included averages, ranges, and standard deviations.

Tutor Surveys

Education Northwest developed a 45-item, online survey based on a review of the Read Right tutoring manual and informal interviews with OPS staff. The survey had four sections. The first section covered teachers' views of Read Right training. The second section included items about implementation and student motivation. The third section used items about teacher efficacy (i.e., their beliefs about how they are able to help students learn called "personal teaching efficacy" and how other teachers are able to help students learn called "general teaching efficacy"). These items were taken from Hoy and Woolfolk (1993), a reliable and valid measure of teacher efficacy. The items on personal teaching efficacy were adapted slightly to reflect the Read Right tutoring context. The last section collected demographic information. See Appendix B for a copy of the survey.

Participants. Tutors from all nine of the schools in the implementation study participated in the study. In all, 35 of 40 (or 88 percent) of tutors completed the survey. Of these, 91 percent were female and 9 percent were male. In terms of ethnicity, 89 percent were white and 11 percent were African American.

[1] All items loaded on the expected factors at .50 or better. On the presurvey, Cronbach's alpha for mastery goals was .78, for performance goals .77, and for work avoidance goals .79. On the postsurvey, Cronbach's alpha for mastery goals was .79, for performance goals .82, and for work avoidance goals .79.

Data Collection. Survey links were e-mailed to tutors' OPS e-mail accounts. Education Northwest sent a reminder e-mail as did the district's lead teacher in secondary English language arts. Education Northwest also contacted lead tutors and asked that they remind all tutors in the school to complete the survey. In the four experimental schools, this contact was by e-mail. In the other five schools, the contact was in person during the observations. Tutors had approximately four weeks to complete the survey.

All tutor surveys were confidential and only accessible to Education Northwest evaluation staff.

Data Analysis. The sections on training, implementation, student motivation, and demographic information were analyzed using descriptive statistics such as frequencies, averages, and ranges. The section on teacher efficacy was analyzed using confirmatory factor analysis to determine whether the items fell into the two categories found in other research: self-efficacy and collective teacher efficacy (Hoy & Woolfolk, 1993). We then examined the internal reliability of the items using Cronbach's alpha.[2] Next, items for each type of goal were averaged across individual students to provide a single score for each student in each of the three categories. Finally, we used descriptive statistics to describe the findings.

Interviews

Principal and lead tutor interviews used a semi-structured interview protocol. The protocols were developed by Education Northwest based on Read Right's structure and on conversations with OPS and Read Right staff about the ideal implementation of Read Right and challenges to implementation.

The principal interview used 10 items. Topics included the principal's background, the principal's knowledge of Read Right, how Read Right compared with other Tier 3 interventions (i.e., those for the lowest 10 to 20 percent of readers in the school), implementation challenges, and how Read Right impacts student achievement and motivation to read.

The tutor interview used 26 items. Topics included the teacher's background, the teacher's view of Read Right training, school-level implementation, student motivation and attitudes, and teacher attitudes and efficacy. See Appendix C for the interview protocols.

Participants. All principals and teachers from the nine schools in the implementation study were interviewed. Both principal and teacher interviews were in-person interviews at the school, with one exception. One tutor was ill on the scheduled interview day and that interview was conducted by phone.

Data Collection. Evaluators took near-verbatim notes during the interviews. While the notes were not always the exact words of the interviewees, they conveyed the content of the interview and, as much as possible, reflected the words of the interviewees.

The principal interview lasted approximately 30 minutes, and the teacher interview lasted approximately 60 minutes. All interviews were voluntary and confidential.

[2] All items loaded on the expected factors at .51 or better. Cronbach's alpha for personal teacher efficacy was .81 and for general teacher efficacy was also .81.

Data Analysis. Principal and teacher interviews were analyzed separately. Both were analyzed across participants to identify themes using content analysis.

Student Focus Groups

Student focus groups used a semi-structured focus group protocol. This protocol, included in Appendix D, was developed by Education Northwest based on Read Right's structure and on conversations with OPS and Read Right staff about students' perceptions of and experiences in Read Right.

The focus group protocol used eight items. Topic included the students' views of the main goals of Read Right, the students' reading habits and purposes, the students' views of the usefulness of various aspects of Read Right, the students' relationships with tutors, and the students' uses of Read Right strategies in other class.

Participants: Thirty-one students from eight of the nine schools in the implementation study participated in focus groups.

Data Collection. Read Right tutors distributed and collected parent permission slips for participation in the focus groups. Ideally, this would have resulted in a pool of students, and four students from this pool would have been randomly chosen for interviews. However, due to low return rates for permission slips, teachers had to encourage students to return the permission slips. In several cases, this resulted in a sample that was essentially chosen by the Read Right tutor, and in one school no students returned the permission slip. Therefore, these focus groups may over-represent students with positive views of Read Right.

The focus groups took place at the school and lasted approximately 30 minutes. Students were assured that the focus groups were voluntary and that all discussion was confidential.

Data Analysis. Focus groups were analyzed for themes across students and schools. Content analysis was used to derive these themes.

Classroom Observations

Observations used one of two protocols developed by Education Northwest. One protocol was developed to examine excellent and coached reading lessons, and the other was developed to examine critical thinking lessons. Education Northwest based the observation protocols on a detailed review of Read Right's tutoring manual and refined the protocol through onsite visits to three of the schools in the study with input from the lead teacher in secondary English language arts at OPS. Both protocols are included in Appendix E.

Education Northwest evaluators observed three 40–minute coached and excellent reading lessons in all nine of the schools participating in the implementation study (27 total lessons). Since critical thinking is implemented only on Fridays and only with students reading at the blue level or above, Education Northwest observed a smaller proportion of critical thinking lessons compared to coached and excellent reading observations. In total, evaluators observed six critical thinking lessons in four of the nine schools. As shown in Table 2-7, the average observation was 35 minutes in length, with a total of more than 22 hours of Read Right lessons observed. The observations were spread across five color levels in Read Right (from red to purple).

Table 2-7
Characteristics of Observations

	Excellent/Coached Observations (n = 27)	Critical Thinking Observations (n = 6)
Average length of observation	35 minutes	36 minutes
Color level observed		
Red	11% (3)	-
Green	22% (6)	-
Blue	26% (7)	33% (2)
Lime	26% (7)	27% (1)
Purple	15% (4)	50% (3)
Yellow	-	-

Data Collection. Evaluators who conducted these observations participated in a two-day training on using the protocols. During one of these days, Dee Tadlock, the creator of Read Right, donated her time to review the classroom procedures used in Read Right and train evaluators in recognizing excellent reading.

Observations were conducted during a single week in the fall of 2009 in the four experimental schools and during a single week in the spring of 2010 in the five schools that were not in the experimental study.

During the first day of each week, two evaluators observed at the same school in order to calibrate their observations of both critical thinking and coached and excellent reading. By the end of the day, evaluators had at least 80 percent agreement on their observations. The evaluators then separated to observe the remaining schools.

Data Analysis. Data were analyzed using descriptive statistics, such as averages and ranges, as well as content analysis for narrative data in the observations.

CHAPTER 3: STUDENT ACHIEVEMENT OUTCOMES

HIGHLIGHTS

- Overall, the experimental study showed that Read Right had a significant positive effect on middle and high school students' reading comprehension in Omaha schools as measured by the Gates-MacGinitie Reading Comprehension Test.
- At the school level, analyses in three of the four schools showed that the treatment group outperformed the control group on the posttest, although this effect did not reach statistical significance in one school. In the fourth school, the control group outperformed the treatment group although this difference was not statistically significant.
- Subgroup analyses showed that African American and white students in Read Right outperformed African American and white students in the control group. The difference in achievement was statistically significant for African Americans but not for whites, possibly due to the small number of white students in the study. Latino and special education students in Read Right also outperformed their counterparts in the control group, but the differences were not statistically significant. For ELLs, the control group outperformed the treatment group, although this difference was also not statistically significant.
- Analysis of posttest data and tutoring records showed a significant correlation between students' total number of tutoring hours and students' posttest scores. The more hours of tutoring the higher the posttest scores.

CHAPTER 3:
STUDENT ACHIEVEMENT OUTCOMES

Student achievement was measured by a multi-site experimental study. Four schools were selected for participation in the study, and within each school, eligible students were randomly assigned to participate in Read Right (the treatment group) or to be in a study hall or elective (the control group). All students in the study also participated in regular English language arts classes. Instruction in these classes varied by teacher in terms of pedagogical approaches but followed a common set of district English language arts standards. The intervention itself began at the start of the 2009–2010 school year and continued throughout the fall semester.

Results for reading comprehension are described in this chapter. Figure 3-1 illustrates the methodological design.

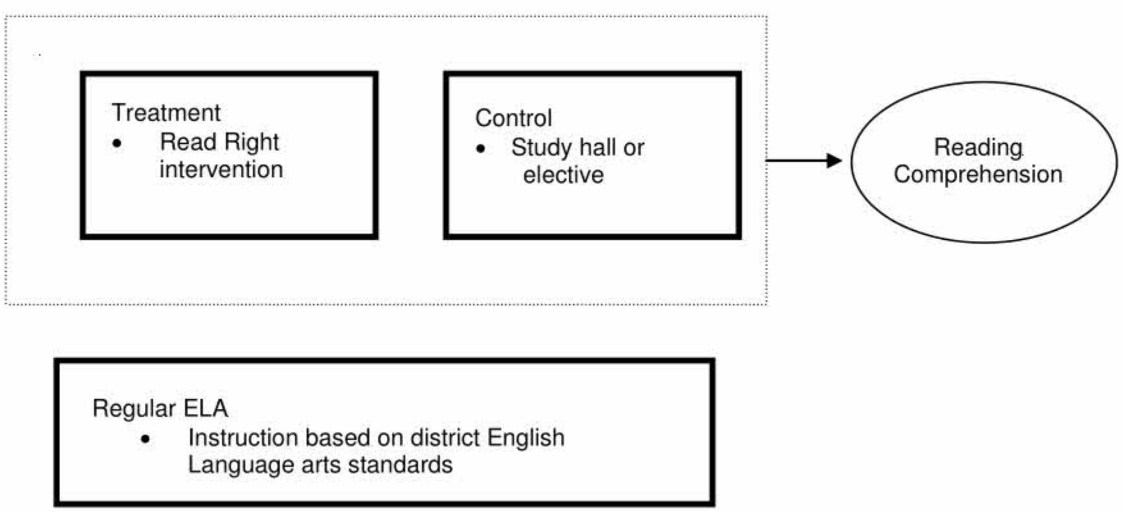
More details about the methods used in the experimental study are provided in Chapter 2.

This chapter discusses several different analyses of the results of the Gates-MacGinitie Reading Comprehension Tests. First, we examined the main effect of Read Right for students in all schools. Next, we explored how this main effect varied by school. Then, we looked at how results differed for different student groups: whites, African Americans, Latinos, ELLs, and special education students. Finally, we examined the impact of the total number of tutoring hours on posttest scores for students in Read Right.

Main Effects

The main regression analysis showed a significant positive effect of Read Right on middle and high school students' reading comprehension as measured by the Gates-MacGinitie Reading Comprehension Test. The mean for students in the treatment group was 5.49 scale score points higher than for students in the control groups.

Figure 3-1



Read Right Experimental Study Design for Reading Comprehension

Table 3-1
Overall Impact of Read Right

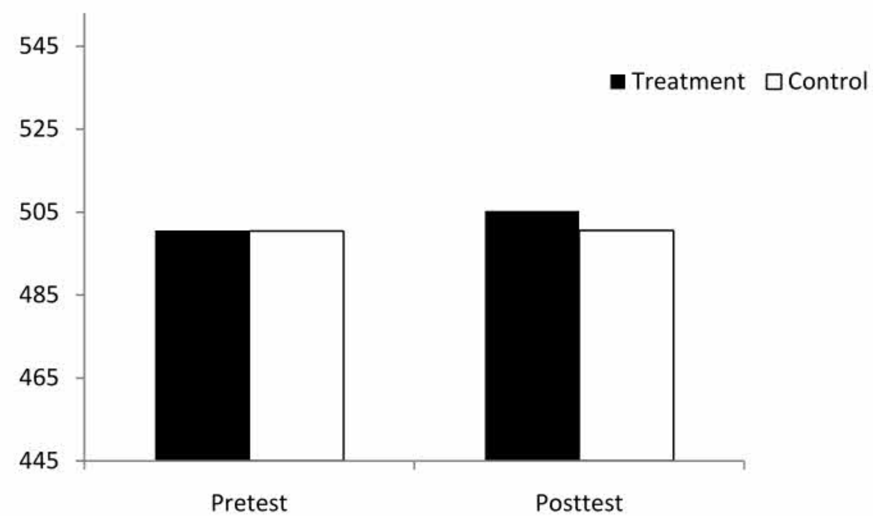
	Condition	n	Regression-adjusted Posttest Means	Estimated Impact	Effect Size	P-value
All Schools	Control	208	499	5.49	.23	.000
	Treatment	216	504			

As shown in Table 3-1, this difference was statistically significant, even after accounting for students' pretest performance.[3]

To understand the magnitude of the difference between the treatment and control groups, we examined what is called the "effect size." This was calculated using Glass's delta as the difference between the two groups' means on the posttest, divided by the standard deviation of the control group for the posttest (Glass, 1977). An effect size of 1.0, for example, means that the difference was equivalent to one standard deviation. In this study, the effect size was 0.23, or more than a fifth of a standard deviation.

Figure 3-2 depicts these results graphically using the sample means for the pre- and posttests of treatment and control group students. It shows that students in the two groups typically had similar pretest scores. However, students in the treatment group improved on the posttest, while students in the control group, on average, had very similar pre- and posttest scores.

Figure 3-2



Mean Scale Scores for the Gates-MacGinitie Reading Comprehension Pre-and Posttests

[3] A table with the results is also included in Appendix F.

School Effects

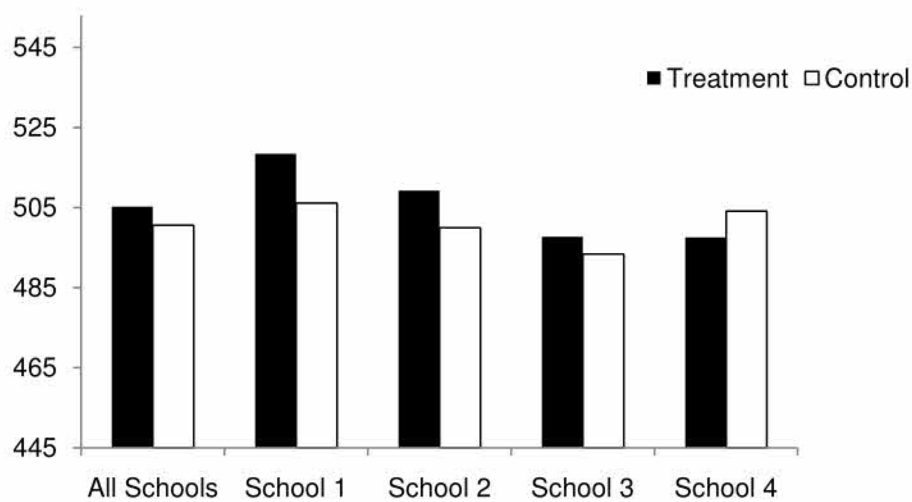
We also explored the effect of individual schools. Regressions for each individual school revealed that effects were similar in three of the four schools. As Table 3-2 shows, in schools 1, 2, and 3 the treatment group outperformed the control group, although this effect did not reach statistical significance in school 3. In school 4, results were different. Students in the control group performed better on the posttest although this difference was not statistically significant.[4]

Figure 3-3 depicts these results graphically, showing that the treatment group outperformed the control group overall. In three of the four schools this pattern was consistent.

Table 3-2
Impact of Read Right by School

School	Condition	n	Regression-adjusted Posttest Means	Estimated Impact	Effect Size	P-value
School 1	Control	48	504	9.6	.42	.011
	Treatment	45	514			
School 2	Control	58	499	12.2	.58	.000
	Treatment	62	512			
School 3	Control	55	495	4.9	.21	.214
	Treatment	62	500			
School 4	Control	47	504	-5.1	-.19	.246
	Treatment	47	499			

Figure 3-3



Mean Scale Scores for the Gates-MacGinitie Reading Comprehension Posttest by School

[4] A table with the results is also included in Appendix F.

Differences in the effects by school might be due to the way Read Right instruction was delivered at the school, to differences in the student population served and how well Read Right works for that population, or to differences in the amount of instruction students at the different schools received. These findings suggest that the impact of Read Right may not be the same in all settings or for all student populations.

Further investigation of the data showed that the large population of Latino and ELL students may account in part for different results in School 3 and School 4. These schools have large percentages of Latino and ELL students. In addition, our analyses showed that the treatment effect for Latino and ELL students was not as strong as it was for non Latino and non ELL students. These findings are described in the next section of this chapter.

Another possible partial explanation for the difference between schools may be the total number of tutoring hours students received. A statistical procedure called ANOVA showed that students at School 3 and School 4 received significantly fewer hours of tutoring: School 1 had an average of 22 total tutoring hours per student, School 2 had 21, School 3 had 14, and School 4 had 17.[5] An analysis described at the end of this chapter showed that more hours of tutoring predicted larger gains on the Gates posttest. Schools 3 and 4 may have had more absences, more suspensions, or both. Determining exact reasons for the differences between schools, however, is beyond the scope of this evaluation.

Effects by Subgroup

To determine whether Read Right had different effects depending on students' ethnicities, ELL status, or special education status, this evaluation repeated the main effects analysis using the data only from students in each of the five subgroups. This resulted in five different linear regressions, one for each student subgroup. As shown in Table 3-3, Read Right students

Table 3-3
Estimated Posttest Results for Control and Treatment by Ethnicity

Analysis	Condition	n	Regression-adjusted Posttest Means	Estimated Impact	Effect Size	P-value
African American	Control	77	497	7.6	.34	.007
	Treatment	78	504			
Latino	Control	86	502	0.7	.03	.828
	Treatment	88	503			
White	Control	41	494	8.1	.30	.089
	Treatment	43	502			
ELL	Control	33	495	-0.4	-.02	.939
	Treatment	39	494			
Special Education	Control	50	495	2.0	.08	.625
	Treatment	55	497			

[5] $F(3, 217) = 32.84$, $p = .000$, Tukey Post Hoc (School 1 and School 2 significantly different from School 3 and School 4, both $p = .000$)

outperformed control group students in all subgroups except ELLs. These differences were statistically significant for African American students, but not for any other group, although the effect size (.30) for white students was moderately strong. For white students, the difference between control and treatment was not statistically significant possibly due to the small sample size (only 84 students in treatment and control groups combined).[6]

We were not able to examine the effects of subgroup status within the four schools in the study due to inadequate sample sizes, although we did account for the school in the overall analyses for subgroups.

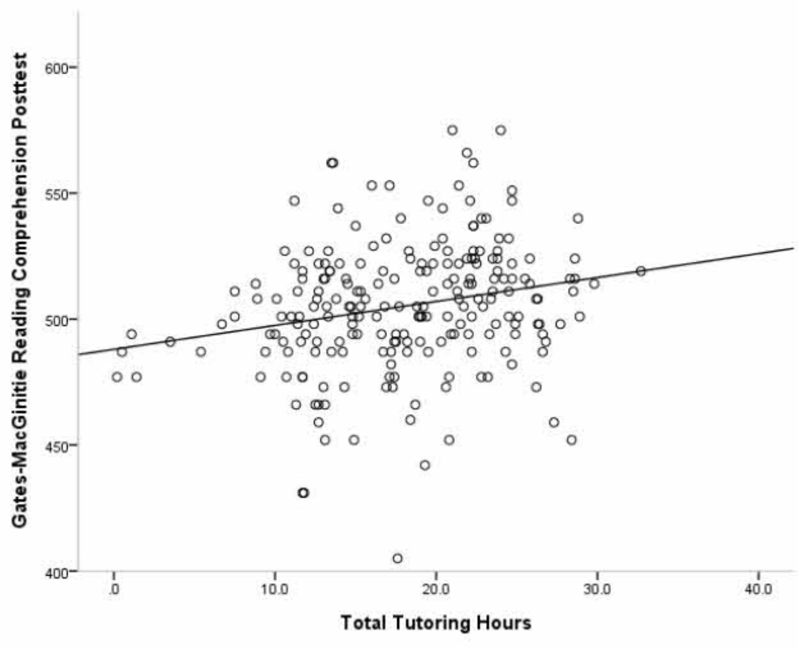
Effects of Total Hours of Tutoring Within Treatment Group

To explore how the number of hours of tutoring impacted student achievement, we combined Read Right tutoring data with Gates-MacGinitie testing data. The number of tutoring hours reported by tutors ranged from 1.4 to 33 with an average of 18 hours. Since the intervention took place daily for about 40 minutes and lasted a semester (approximately three months), the average number of tutoring hours is somewhat lower than might be expected. This could be due to student absences or some other interruptions in the tutoring routine.

As shown in Figure 3-4, there was a significant correlation between the total number of tutoring hours students received and their posttest scores. In general, the more hours of tutoring the higher the posttest scores.

We used linear regression to determine how the total number of tutoring hours for each

Figure 3-4



Correlation Between Total Hours of Read Right Tutoring and Gates-MacGinitie Reading Comprehension Posttest

[6] A table with the results is also included in Appendix F.

student related to that student's posttest while accounting for prior achievement on the pretest. The relationship between tutoring hours and posttest scores was positive and statistically significant.[7] When pretest achievement was controlled for, each reported hour of Read Right tutoring corresponded with a 0.6 increase in posttest score. This means that given 40 minute tutoring periods, an extra week of Read Right tutoring resulted in about a 2 point gain on the extended-scale score of the Gates-MacGinitie Reading Comprehension Test on average.

[7] A table with the results is also included in Appendix F.

CHAPTER 4: STUDENT MOTIVATION OUTCOMES

HIGHLIGHTS

- At the end of the semester, a significantly larger proportion of Read Right students reported they read for fun almost every day compared to students in the control group. Many Read Right students said they read for pleasure in general, and many had specific reading interests, such as reading sports articles, horror stories, or romances.
- The evaluation found no significant differences in the percentages of Read Right and non-Read Right students who reported talking with friends and family frequently about books or in the percentages who aspired to higher education.
- Students, both in Read Right and in the control group, reported multiple goals for reading. The evaluation found no significant differences between the two groups and no changes in motivation that could be attributed to Read Right. Many Read Right students in focus groups, however, believed that Read Right increased their motivation to read.
- Most principals indicated they believed Read Right increased student motivation to read. They based their perceptions on talking with or observing students.
- Like principals, most tutors reported that Read Right students typically increased their motivation to read. In addition, about two-third said student behavior problems rarely interfered with Read Right instruction.
- Despite the fact that most teachers said students were typically motivated by Read Right, most also reported that there were some students who just didn't like reading even after participating in Read Right. Student focus groups mirrored these findings: about a fourth of students did not believe Read Right was motivating.

CHAPTER 4: STUDENT MOTIVATION OUTCOMES

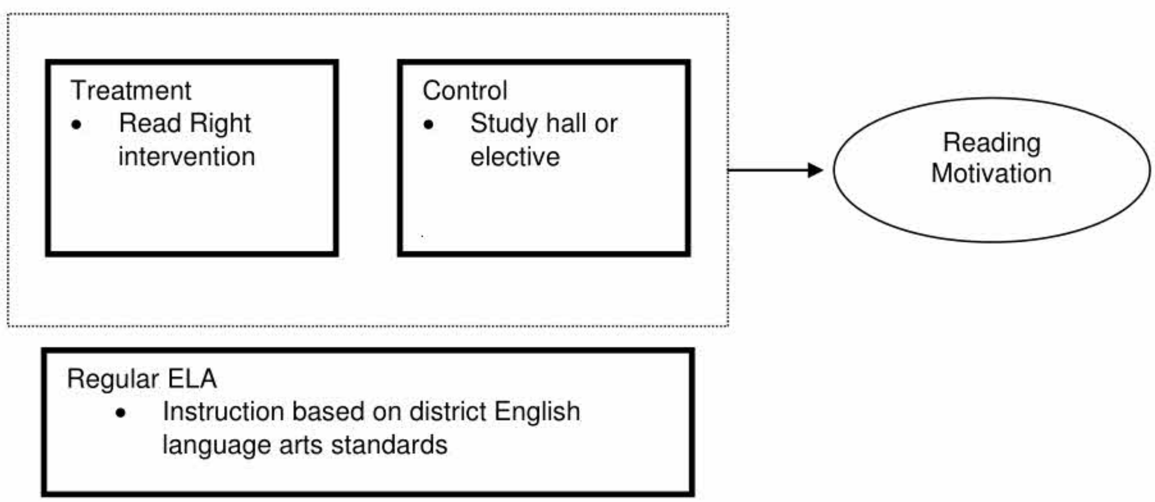
Like student reading achievement, student reading motivation was measured primarily by a multi-site experimental study. Four schools were selected for participation in the study. Within each school, eligible students were randomly assigned to participate in Read Right (the treatment group) or to be in a study hall or elective (the control group). All students in the study also participated in regular English language arts classes. Instruction in these classes varied by teacher in terms of pedagogical approaches but followed a common set of district English language arts standards and a common set of school and district behavioral expectations. The intervention itself began at the start of the 2009–2010 school year and continued throughout the fall semester.

Figure 4-1 illustrates the methodological design of the experimental study.

More details about the methods used in the experimental study are provided in Chapter 2. Additional data on student motivation were collected through student focus groups and through principal and tutor interviews.

Results for reading motivation are described in this chapter. It discusses several different analyses of the impact of Read Right on student motivation to read. First, we examined differences in student reports of their reading outside of school and their interest in higher education. Next, we explored students' goals for reading. Finally, we described tutor and principal perceptions of students' motivation.

Figure 4-1



Read Right Experimental Study Design for Reading Motivation

Reading Outside of School Time and Higher Education Aspirations

Previous research has shown that students' reading behaviors and aspirations for education are connected to reading achievement (National Assessment of Educational Progress [NAEP], 2009). To examine Read Right's impact on students' reading behaviors and aspirations, we used three items from previously developed nationally distributed surveys: two items from the NAEP and one from the Gaining Early Awareness and Readiness for Undergraduate Programs (GEAR UP) student survey.

Reading outside of the school day, in particular, has been correlated with higher mean scale scores on NAEP (NAEP, 2009).The first NAEP item we used on the student survey asked, "How often do you read for fun on your own time?" A statistical test called chi square showed that there were no statistically significant differences between the treatment and control groups on the presurvey in the fall. However, there were statistically significant differences on the postsurvey at the end of the semester: A significantly larger proportion of treatment students (31%) reported they read every day compared to control group students (17%).[8] Percentages are shown in Table 4-1. This table also shows how percentages for Omaha students compared with a national sample of public school students and a representative sample from 18 large urban school districts.

Table 4-1
Percentages of Students Reporting How Often They Read for Fun

Sample	Never or Hardly Ever	1 or 2 Times Per Month	1 or 2 Times a Week	Almost Every Day
Read Right Students in Omaha (Postsurvey)	19%	20%	32%	30%
Control Group Students in Omaha (Postsurvey)	29%	18%	36%	17%
National Public Schools, 2009 NAEP	32%	23%	24%	21%
Large City Public Schools, 2009 NAEP	29%	27%	27%	17%

[8] Pretest: $\chi^2(3, N = 396) = 0.95, p = .813$. Posttest: $\chi^2(3, N = 394) = 13.22, p = .004$.

Table 4-2
Percentages of Students Reporting How Frequently They Talk With Friends or Family About Reading

Sample	Never or Hardly Ever	1 or 2 Times Per Month	1 or 2 Times a Week	Almost Every Day
Read Right Students in Omaha (Postsurvey)	38%	25%	24%	13%
Control Group Students in Omaha (Postsurvey)	44%	24%	23%	9%
National Public Schools, 2009 NAEP	37%	29%	24%	9%
Large City Public Schools, 2009 NAEP	36%	29%	24%	10%

Discussing reading with peers and family has also been correlated with higher mean scale scores on NAEP (NAEP, 2009). The second NAEP item we used on the student survey asked, "How often do you talk with your friends or family about something you have read?" There were no statistically significant differences in how Read Right and control group students answered this question on either the pre- or postsurveys. Table 4-2 shows that results in Omaha were similar to results nationally and to results in the 18 large cities participating in NAEP's study of urban districts.

Increased reading might correlate with increased desire for education. To explore how students' educational aspirations were affected by Read Right, we used an item from the GEAR UP Student Survey. GEAR UP is a national initiative to increase the number of low-income students who are prepared to enter and succeed in postsecondary education. Students begin participating in GEAR UP in seventh grade and are followed through high school. The item from the GEAR UP survey was, "What is the highest level of education that you think you will get?"

There were no statistically significant differences in how Read Right and control group students answered this question on either the pre- or postsurveys. Table 4-3 shows that results in Omaha were lower than the results for students who had participated in GEAR UP.

While Read Right did not appear to impact students' college aspirations based on this survey item, it is important to note that Read Right focuses primarily on reading. GEAR UP, in contrast, focuses directly on informing students about higher education and encouraging them to go to college.

Table 4-3
Students' Educational Aspirations

	High School or Less	Some College	College Degree or Higher
Read Right students in Omaha (Postsurvey)	22%	25%	53%
Control group students in Omaha (Postsurvey)	21%	24%	55%
National survey of 11th and 12th grade students in GEAR UP (2006)	7%	22%	71%

Students' Goals for Reading

Previous research has described students' motivation in terms of their goals for learning and categorized these goals into three groups: mastery goals, performance goals, and avoidance goals. Mastery goals include the desire to learn new things because learning is enjoyable and important to the student personally. Performance goals include learning in order to do well compared to others, to do well in order to please adults, or to gain external rewards such as grades or a good job. Avoidance goals are quite different. They include behaving in ways that allow students to avoid appearing incompetent, which often includes a reluctance to engage in learning tasks that might make the student appear less than competent. Both mastery goals and performance goals are associated with higher academic performance, but only mastery goals are associated with persistence in the face of difficulty and seeking help appropriately to learn new things (Elliot & Dweck, 1988; Grant & Dweck, 2003, Karabenick, 2004).

Because Read Right is based on constructivist views of student learning, which assume that students are responsible for constructing meaning from text, this evaluation sought to examine how Read Right impacted students' goals for their own learning. Did Read Right cause students to adopt mastery learning goals? To examine Read Right's impact on students' goals, we adapted a survey from Meece and Miller (2001). This survey contained 15 items—five of which indicated mastery goals (e.g., "I read because I like to learn new things"); five indicated performance goals (e.g., "Reading better than other students is important to me"); and five indicated avoidance goals (e.g., "One reason I might not read out loud in my classes is so I don't look stupid").

As shown in Table 4-4, average ratings of each type of goal were slightly higher than the mid-point of the four-point scale for all goal types and for both the treatment and control groups. This means that many students had multiple goals for reading. In the treatment group, the average rating for mastery goals increased, while average ratings for performance goals and avoidance goals decreased; this represents the desired outcomes of Read Right.[9] These decreases, though small, were statistically significant,

[9] Treatment group: mastery goals t (200) = -1.9, p = .058, performance goals t (202) = 2.2, p = .028, avoidance goals t (201) = 4.80, p = .000

Table 4-4
Average Pre- and Postsurvey Scores for Learning Goals of the Students in the Treatment and Control Groups

Goals	Average for Treatment Group	Average for Control Group
Mastery Pre	2.7	2.7
Mastery Post	2.8	2.7
Performance Pre	2.6	2.7
Performance Post	2.5	2.6
Avoidance Pre	2.6	2.6
Avoidance Post	2.4	2.4

Scale: 1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree

but the increase in mastery goal ratings was not significant. However, average ratings for the control group showed a similar pattern.[10] Furthermore, regression analyses showed that there were no significant differences in goals between the treatment and control group students once presurvey measures were controlled for. This means that changes in goals cannot be attributed to Read Right, because the control group had similar changes.

Results based on interviews. Like the student surveys, focus groups with Read Right students showed that students had multiple goals for reading. However, the most frequently discussed goal for reading was mastery (i.e., improving reading and learning new things). Some students wanted to read to learn in general, and some had very specific interests.

> *Books are interesting, and you want to know more. You want to get to know things you don't know. (Read Right student)*

> *I'm in a marketing class right now, and the reading just helps me understand it and put my brand out there, so I've been reading books about that. It's stuff that I'm into; marketing, business. I want to be an entrepreneur. (Read Right student)*

Almost as many students said they read for pleasure as read to master new things. Reading for pleasure may be seen as a subset of reading for mastery, because pleasure reading also involves intrinsic motivation. However, students described their pleasure reading slightly differently. Many said they read for entertainment in general and several had specific genres that they enjoyed.

> *You read to not be bored, for fun. (Read Right student)*

> *I usually read articles if there is a Nebraska football article in the paper, because it is my favorite team. So I read the newspaper mostly. (Read Right student)*

> *I read* Stolen*, because it looked like a scary story. I like scary stories. (Read Right student)*

> *I'm reading* The Last Song*. There'll be a movie coming out, and I wanted to read the book first. The book is getting good. It's a romance, and I like romances. (Read Right student)*

[10] Control group: mastery goals t (193) = -1.06, p = .291, performance goals t (1934) = 1.51, p = .132, avoidance goals t (193) = 3.80, p = .000

The fact that many Read Right students said they read for enjoyment supports the survey finding that after Read Right instruction, more students reported they read for fun almost every day: 31 percent in Read Right compared to 17 percent in the control group.

Students also reported more practical reasons for reading. About half the students said they sometimes read because they "had to" for school or because their parents made them. A few students also said they read in order to avoid making mistakes (avoidance goals), and one said he read in order to get a good job later (a performance goal).

> *You read so that you don't make mistakes in class. (Read Right student)*

> *You read to get job skills, to help you get a job later. (Read Right student)*

Did Read Right change students' motivation to read according to the student focus groups? Student focus groups were conducted once during the school year, so these focus groups did not measure actual change in motivation over time. We did, however, ask students to reflect on whether or not they believed Read Right helped students enjoy reading more. Almost three-fourths of students agreed that Read Right increased student motivation to read. Several noted that this was because students in Read Right spent a lot of time practicing reading and got better at it.

> *If you feel better about reading, you'll want to do it more. (Read Right student)*

> *Kids today, they don't understand what they're reading, and they're into other stuff. When you actually understand the book you're reading, you might be inspired to read more. (Read Right student)*

> *"Because now [after being in Read Right], you can get a book and like to read it, because now you can read better and understand the words better and the contents."—Read Right student*

Many students who agreed that Read Right increased reading motivation pointed out that this did not mean that Read Right was always enjoyable. Instead, it was sometimes difficult.

> *"Some of the rules that you have to do in Read Right [e.g., cycling], they're kind of annoying, so you don't read the book at all. But, Read Right helps, and you like to read more books than you read before."— Read Right student*

> *"There's been some [books in Read Right] I don't like. The words are hard. I don't know what they mean."— Read Right student*

About a fourth of the students in the focus group said that Read Right did not motivate students to read. Instead, they said things such as "reading is always boring" and "students don't want to be in Read Right" and "I don't like reading."

While many students said Read Right increased student motivation to read, slightly more said that they used what they learned in Read Right in their other courses. Among those who said this, some said that Read Right simply helped them read better so that they could read to learn in other classes; some said the Read Right books increased their content knowledge; and some said Read Right built confidence because it taught students to reread for understanding.

> *The reason you're in Read Right is so that you can read better in your mind and comprehend. The practicing we*

have here helps that a lot. You can read better for other classes.
(Read Right student)

The other day I read a book about the rainforest [in Read Right]. Later in biology, they asked questions [about rain forests], and I knew more. (Read Right student)

In your English class or biology class, when the teacher asks [a student to read], you can read now, and if you make a mistake, you can go back and read it again. (Read Right student)

A few students in focus groups, however, said that what they learned in Read Right did not translate to other classes. All but one of these students was in middle school. It may be that younger students have more difficulty transferring Read Right strategies to other classes.

Principal and Tutor Views of Student Motivation

Principals and tutors provided another view of student motivation. Most principals indicated through their interviews that they believed Read Right had a positive effect on student motivation to read. A couple of principals were unsure if Read Right was having a positive impact on motivation because they did not work with Read Right teachers or students directly, and only one had a negative view. This principal, however, acknowledged that he typically only had contact with Read Right students when they had been having behavior problems in class and, therefore, might have an overly negative view of the program.

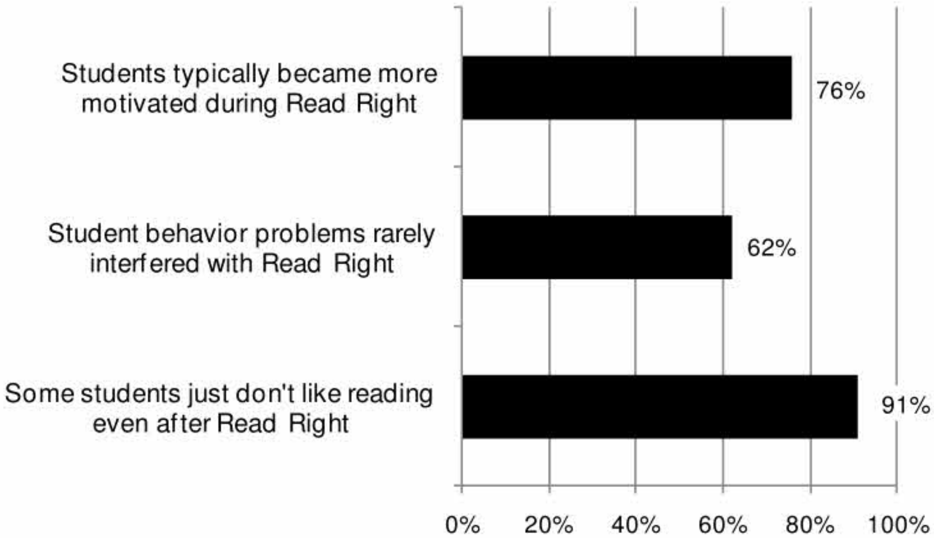
Of the principals who said Read Right had a positive effect on students' motivation, most based their perceptions on talking with or observing students.

I can see the effect of Read Right in the classroom. I see literature circles. I see kids reading plays. When we have assemblies, kids feel good about getting up in front of their peers and reading a script. For our population that is huge, we are 85 percent free or reduced-price lunch. They have no printed material at home. They are getting that here, and I am proud of that. (Principal)

I talk to the kids constantly. 'How's it going? What do you like? What don't you like?' I have not heard kids say, 'Read Right didn't do anything for me.' Day to day they might not like it, but I haven't had kids or parents want to be taken out of the program. (Principal)

Like principals, many tutors (76%) also reported that Read Right students typically became more motivated to read after Read Right. In addition, almost two-thirds of tutors (62%) said behavior problems rarely interfered with instruction during Read Right. Tutor surveys, however, also confirmed what a few students said about Read Right and motivation in focus groups: Some students don't like to read and Read Right doesn't change this. As shown in Figure 4-2, 91 percent of tutors acknowledged that some students just don't like reading even after they have been in Read Right.

Figure 4-2



Tutor Views of Read Right Students' Motivation

Tutor interviews confirmed the tutor survey findings that while students typically increased their motivation through Read Right, some students remained unmotivated and uncooperative. When tutors discussed what was easiest and most challenging about being a Read Right tutor, several mentioned that motivating students who don't want to be in the program (i.e., those with "low intent") was the most challenging thing about Read Right.

> *The most difficult thing is kids with low intent, because it's hard to implement the whole thing with them. They don't really care if their reading improves. (Tutor)*

At the same time, several said getting most students to buy into the program was the easiest thing about implementing Read Right.

> *Students kind of feel important because they are being given that one-on-one specific attention; that makes reading more important to them. (Lead tutor)*

Several tutors noted that the structure of Read Right—one-on-one tutoring and accessible materials—was motivating to many students.

CHAPTER 5:

INSIDE THE READ RIGHT CLASSROOM

HIGHLIGHTS

- In the 2009–2010 school year, approximately 1,500 students from the nine OPS middle and high schools in this evaluation participated in Read Right. Slightly more than half of the students were in middle school. The rest were in high school, mostly in ninth grade. In comparison with all students in the district, a larger percentage of Read Right students were African American, Latino, special education students, and ELLs.
- Classroom observations conducted by evaluators revealed the following findings:
    - All the observations of Read Right in this evaluation met Read Right's recommendation of five students per tutor. In fact, the majority of classrooms had a ratio of one tutor to three or fewer students.
    - For almost all students, the majority of their class time was spent engaged in Read Right activities: excellent reading, coached reading, or independent reading. However, the proportion of time students spent on each activity varied by student. For example, some students spent more time on coached reading while others spent more time on excellent reading.
    - During observations of excellent reading, students' reading success was judged four times on average. In about 50 percent of the judgments, the tutor and student decided the reading was excellent. Observers rarely disagreed with these judgments.
    - During coached reading, tutors intervened in students' reading an average of six times per student. In the majority of these interventions, the tutor asked the student to read the text again. Observers rarely found fault with tutors' interventions.
    - In about two-thirds of all excellent and coached lessons, the tutor clarified vocabulary for the student. Most of these clarifications were in context as is required by Read Right.
    - On average, students spent very little time off-task or waiting for the tutor. However, for some students, preparation time took up more time than might be expected.
    - In critical thinking lessons, students spent the majority of time either reading or discussing questions about the reading. Students disagreed on their answers to these questions less than half the time. Discussions of disagreements varied in duration.
- While many principals and some tutors believed implementing Read Right with high fidelity was challenging, most tutors said they usually followed the tutor manual. When tutors said they did not follow the manual, the deviations they described were usually minor, such as phrasing a comment to a student as a question when in the manual the comment was supposed to be a statement.

CHAPTER 5:

INSIDE THE READ RIGHT CLASSROOM

Read Right classrooms, as described in Chapter 1, look very different from typical middle and high school classrooms. One very noticeable difference is the recommended ratio of no more than five students per adult. Another difference is the types of activities the students are engaged in: Students cycle through routines in excellent reading, coached reading, and critical thinking, repeating the same routines as they move through more advanced materials. Tutors play very specific roles during each routine, following scripted comments and procedures outlined in the Read Right tutor manual.

This chapter begins with a brief description of the Read Right 2009–2010 students. We then use data from 33 classroom observations to describe an average student's experience during a Read Right coached/excellent reading class and a critical thinking class. Finally, interview data describe issues related to implementation fidelity from tutors' perspectives.

Read Right Students

In the 2009–2010 school year, Read Right served approximately 1,500 students in nine middle and high schools. This number is larger than the number that participated in the experimental study since the study was conducted in a subset of four schools. More than half of the students were in middle school (25 percent in seventh grade and 34 percent in eighth grade). The rest were in high school (24 percent in ninth grade, 8 percent in tenth grade, 5 percent in eleventh grade, and 3 percent in twelfth grade).

In comparison to OPS as a whole, a larger percentage of students in Read Right were African American, Latino, special education students, and ELLs.

Read Right Tutors

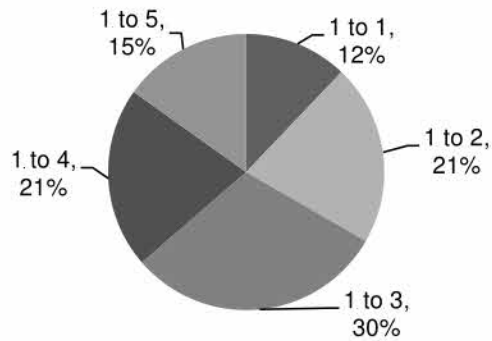
At the end of 2009–2010, there were 40 trained Read Right tutors across nine middle and high schools. This meant that OPS could staff Read Right rooms with enough adults to meet the recommended program ratio of no more than five students per adult. However, five of eight principals interviewed said one of the largest challenges of Read Right was keeping classes small.

It is such a small ratio that it is hard to

Table 5-1
Demographic Information for OPS and Read Right Students, 2009–2010

	OPS	Nine Read Right Middle and High Schools 2009–2010
Total	48,075	1,500
African American	31%	36%
Asian	2%	4%
Latino/Hispanic	25%	37%
Native American	2%	2%
White	40%	21%
Special Education	16%	38%
English Language Learner	13%	20%
Free and Reduced-Price Lunch	62%	87%

Figure 5-1



Ratio of Adults to Students in 33 Observed Read Right Classrooms

have the money to hire the staff....It is hard to swallow the price tag. (Principal)

All of the 33 observed Read Right classrooms had at least one adult for every five students (Figure 5-1). In fact, the majority of observed classrooms (63%) had a ratio of one adult to three students or even lower, possibly due to student absences.

Excellent and Coached Reading

In OPS Read Right classrooms, Monday through Thursday is dedicated to excellent reading and coached reading, described in Chapter 1. Evaluators observed 27 of these classrooms, focusing the observation on a single student for the entire class period each time and coding what they observed the student doing during the class period (see Chapter 2 for details).

In a typical class period of 40 minutes, students spent an average of 12 minutes engaged in excellent reading and 11 minutes engaged in coaching with their tutor[11]. An additional six minutes, on average, was spent engaged in independent reading. The remaining 13 minutes was spent in various activities, of which preparation took six minutes. Off-task behavior and wait time (waiting while the tutor was busy with another student) were uncommon.

Figure 5-2

(Other tasks included book previews, being disengaged, outside interruptions, etc.)

Average Number of Class Minutes Observed Students Spent on Various Activities

[11] Minutes were calculated by applying the average percentage of time students spent on each activity across the 27 observations to a 40-minute period.

While Figure 5-2 shows the *average* number of minutes students spent on various activities, there was actually substantial variation among students. Figure 5-3 illustrates some of the variation by displaying the experiences of four students, chosen because they show both average and extreme examples. For example, student A's experience resembles the average experience across all students. In contrast, student B spent 14 minutes (37 percent of his time) preparing for the lesson, more than twice the average number of minutes. In contrast, student C spent almost no time (2 minutes) preparing for the lesson, but spent 24 minutes on excellent reading, about twice the average number of minutes. Finally, student D's experience focused on coached reading.

An additional analysis revealed that, on average, students in the lowest two levels (red and green) spent more time being coached and less time on excellent reading and independent reading than their peers in the higher color levels (Table 5-2).

Excellent Reading

Excellent reading is an activity in which a student repeatedly alternates listening to and reading a passage in order to read the passage "excellently"(i.e., comfortably, with no text deviations and with natural pace, tones, and flow). When the student thinks he or she can read the passage excellently, the student indicates to the tutor that he or she is ready to read the passage aloud and "be judged." If the student reads aloud

Figure 5-3

Activity (Average*)	Student A (Similar to Average)	Student B (More than Average Preparation)	Student D (More than Average Excellent Reading)	Student C (More than Average Coaching)
Coached (11)	8	0	3	27
Excellent (12)	12	17	24	2
Independent (6)	2	7	9	0
Preparation (6)	5	14	2	9
Other** (3)	3	-	3	2

*Average minutes across 27 observations

**Other includes wait time, off-task behavior, and other activities

Minutes of Time Observed Students Spent Engaged in Various Activities

Table 5-2
Time Students Spent Engaged in Three Activities, By Color Level

Type of activity	Average percentage of class time	
	Red and green levels (9 students)	Blue, lime, purple (18 students)
Coached Reading	37%	23%
Excellent Reading	27%	32%
Independent Reading	10%	18%

Table 5-3
Frequency of Cycle Repetitions and Judging During Excellent Reading

	Number of times	
	Average	**Range**
Excellent reading judged	4	0-10
Repetitions during cycling	20	0-63

N=21 observed students

excellently, the student moves on to cycle the next segment of text. If not, the student continues to practice or, occasionally, the tutor may assign an easier or shorter text.

Three -fourths of the observed students (78%) engaged in excellent reading during class. Of the six students who did not do excellent reading, most were engaged in coached reading for the majority of class. As shown in Table 5-3, students were judged by their tutor an average of four times during excellent reading and repeated text segments an average of 20 times. This meant an average "cycle" involved five repetitions of a text segment per judgment. In about one-quarter of observations, the evaluator noted that, in her opinion, the student was either undercycling or overcycling, which may be reflected in the large range of repetitions (between zero and 63) shown in the table. The number of repetitions was also expected to vary based on how close the student was to moving to the next color level (i.e., to a book in the next level of difficulty). Students who are ready to move to the next color level typically cycle about three times before achieving excellence (Tadlock, 2008), while those beginning a color level would be expected to cycle more.

In an excellent reading, the student typically first tells the tutor whether the reading was excellent in the student's opinion and then the tutor can either agree or disagree with that judgment. If the tutor believes it was excellent, the student begins cycling the next passage. If the tutor believes it was not excellent, the student must cycle the same passage again. Half of students' judged readings (52%) were determined to be excellent by the tutor (Table 5-4).

Students and tutors disagreed about one in 10 times; sometimes the student said their reading was excellent and the tutor disagreed, but sometimes the student said it was not excellent but the tutor thought it was. In only a few, rare instances (4%) did the observer believe that the tutor misjudged the student's reading.

Coached Reading

In coached reading, the student reads aloud to the tutor. All but the lowest level students read text that is new to them. The lowest readers first listen to the text read aloud by the tutor. As the student reads, the tutor has short scripted ways of intervening when the student has difficulties. There are three basic ways to intervene:

> **Skip it.** "Skip it [for whatever word/phase is difficult] and read it again."

Table 5-4
Judgments of Excellent Readings

	Average percentage of times
Tutor said judged reading was excellent	52%
Student said judged reading was excellent	53%
Tutor and student disagreed about excellence	10%
Observer disagreed with tutor about excellence	4%

N = 21 observed students

Doesn't Work. "That doesn't work [for a misread word]. Read it again."

Read it again. "Read it again so it feels more comfortable [for a passage the student reads correctly but stumbles on].

Three-quarters of observed students (74%) engaged in coached reading. During this time, tutors intervened with corrections an average of six times per student (range 1–21). The majority of the time, the tutor used the "read it again" strategy (56%). The tutor used the "doesn't work" strategy 25 percent of the time and the "skip it" strategy 18 percent of the time.

Observers disagreed with only 5 percent of all 119 corrections that were observed. For example, the tutor might have used the "read it again" strategy when the "that doesn't work" strategy was more appropriate, or the tutor might have just given an unknown word when the "skip it" strategy was called for.

Vocabulary. Teaching vocabulary in isolation is not a focus of Read Right, but tutors have specific strategies to handle a situation when the vocabulary itself is interfering with a student reading excellently. In these cases, the tutor might ask if the student knows the word or might simply tell the student the meaning of the word. Read Right requires that the meaning of the word always be given in the context of the text.

Clarifying vocabulary happened in two-thirds of all excellent and coached lessons (63%); usually once or twice per student. (In a few atypical cases, vocabulary was addressed 7 or 8 times.) In 85 percent of the 40 vocabulary clarifications captured by observers, the clarification was done in context, as called for in the program.

Free Comments. At any point in the lesson, tutors are allowed to make what Read Right calls "free comments," such as relating something in the story to something in the student's experience. Free comments were made in three out of four observed coached/excellent readings (74%). Usually, there were only a handful of free comments. However, 10 percent of lessons had between 5 and 24 free comments.

Disengaging Students. If a student's behavior is interfering with learning, Read Right asks tutors to use a strategy called "disengage." A tutor will ask a student to disengage, which basically means the student should stop reading and possibly put his/her head down or otherwise move apart from the lesson. Of the 27 students who were observed, one was asked to disengage.

Critical Thinking

One day per week, students engage in Read Right critical thinking activities. During this time, a small group of students reads an identical passage silently and then independently answers a series of multiple choice comprehension questions. The group of students then discusses each question, using a particular procedure ("group work"). They must eventually come to a group consensus on the correct answer. The tutor can guide the discussion by asking questions, but should not provide students with the correct answer.

Evaluators observed small groups of students during six separate critical thinking lessons. Instead of focusing on an individual student, as observers did when they observed coached and excellent reading, critical thinking observations followed a group of students working with a tutor.

These six lessons provide a "snapshot" of what critical thinking lessons look like.

On average, students spent 18 minutes participating in group work, 12 minutes reading, 6 minutes preparing for the lesson, and 4 minutes doing other activities (Figure 5-4). There was a range, however, across the groups. For example, the amount of time on paperwork ranged from 0 to 11 minutes while the amount of time on group work ranged from 10 to 30 minutes. "Other" activities occurred in only two of the six classrooms. For example, one group spent 14 minutes talking about the end-of-the year schedule and the subject matter of the books they were reading.

During group work, student groups answered an average of nine questions (range 6–19). All students immediately agreed on the answer to about half of the questions (56%), so no discussion was necessary. For just under half of all questions (44%), answers were not the same and students had to discuss their answers until they came to consensus. In these discussions, students were supposed to support their answer with evidence from the text and try to persuade other students to change their answers and reach consensus. Out of every three students who supported their answer, one student changed his/her response. In two instances across the 55 questions observed (4%), students agreed on the wrong answer. (This is acceptable under Read Right protocols; tutors are not supposed to intervene if student consensus is incorrect.)

Sometimes discussions involved very little dialogue among students, such as in a class where the students tried to answer the question, "Freezing rain can cause: a) the gas tank to explode; b) the car to leak; c) you to be trapped in the car." In this example, only one of three students correctly answered "c." The following dialogue took place:

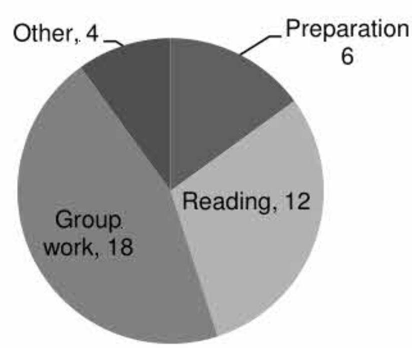
Student 1:	It says that you can be trapped in the car.
Tutor:	Do you want to show them where that is?

Student 1 points out the text to the other students.

Student 2:	Oh, it's right here, paragraph 3.
Student 3:	Yeah, I see it.

Students 2 and 3 switch their answers.

Figure 5-4



Average Number of Class Minutes Observed Students Spent on Various Critical Thinking Activities

Other discussions were more similar to the following example in which the class discussed the question, "In the nursery, worker ants look after the: a) queen, b) seeds, c) larvae, or d) leftovers. Student 1 chose "a) queen" (incorrect) while students 2 and 3 chose "c) the larvae." The following dialogue took place.

Tutor [to S2]:	Where is it in the story?
Student 2:	Paragraph 3.
Tutor:	Read it.
Student 2:	(*reads*) The royal chamber is a place where the queen ant lays her eggs. The queen spends her whole life laying eggs. She never leaves the chamber except to start a new nest. Worker ants must bring her food.
Tutor [to S3]:	Where did you find your answer?
Student 3:	Paragraph 3
Tutor :	Look at paragraph 4. Would you read that?
Student 1:	(*reads*) The worker ants in an ant colony have many different jobs. Some workers pull the eggs from the royal chamber into a room called the 'nursery.' There, they help larvae climb out of their shells.
Student 1:	I'm sticking with 'a' [*pause, appears to be reading in the book*]. No, no, now I'm switching to 'c,' because they are getting the larvae.
Tutor:	Yes, sometimes it's important to look back at the question.

Other findings from the critical thinking observations include:

- Vocabulary was clarified an average of 3 times per class (range 0–7). As directed in the program, clarification always occurred in the context of the lesson.
- No students were "disengaged" by the tutor, but in one observation, four students were off task for more than 15 minutes.
- Tutors made "free comments" in every lesson: an average of four comments per class period (range 1–9).

Implementation Fidelity

Implementing Read Right means following a very specific set of procedures and using scripted comments to respond to students. For example, "Skip it [for whatever word/phase is difficult] and read it again," is the comment a tutor typically makes when a student has difficulties reading a word during coached reading. Other examples of the Read Right procedures were described earlier in this chapter.

During interviews, two-thirds of principals said that one of the biggest challenges to implementing Read Right was getting tutors to be faithful to the scripted nature of the program.

I found out one of my teachers wasn't even doing Read Right during the Read Right class. I had to change the name of the class to fit what the teacher was doing. (Principal)

I think one of the teachers found it difficult to follow something that was so heavily scripted. We've had other programs that were scripted and, for some teachers, that is just always a problem. (Principal)

The personalities of the teachers are important. Because it is so regimented, you have to have the right mentality. (Principal)

Tutors themselves, however, were more likely to feel they used the program with fidelity. The majority of surveyed tutors (88%) agreed that they always followed the program as intended.

Additionally, about two-thirds of interviewed tutors were confident that they followed the program, perhaps with minor deviations or errors. Most often, these tutors said they "forget" or "get lazy" about flipping to the "to go" pages. One tutor mentioned that she had high fidelity but made some "human errors, like asking instead of telling students something." Other modifications that were mentioned included adding more books for ELLs and reading passages aloud instead of letting students listen to them on MP3 players.

I follow the program 95 percent of the time. Once in while we forget to flip, because we have the pages memorized. (Tutor)

I think we all do a pretty good job [following the program]. (Tutor)

One-third of interviewed tutors described slightly lower fidelity to the program, saying they changed some routines to "work better with my students" or didn't use strategies such as disengagement. However, no tutors described any modifications that completely changed the structure of the program.

We primarily do the right thing, but we are not perfect. Sometimes with our students you have to improvise and see what works for them. (Tutor)

Inner city high schools are not a textbook. You can't do verbatim from the manual. Things like disengaging students…I would have World War III on my hands if I used that. (Tutor)

Tutors who were concerned about the way *other* tutors used the program included concerns that other tutors were uncertified, allowed over cycling, modified the stuck strategy too much, did not use the manual enough, or failed to disengage students who were not participating. These kinds of concerns were raised by half of the interviewed tutors.

CHAPTER 6:
TUTOR, PRINCIPAL, AND STUDENT VIEWS OF READ RIGHT

HIGHLIGHTS

- Most tutors enjoyed their work, felt effective at their jobs, and were respected at their schools. Those who enjoyed being tutors were more likely to plan on continuing in that role for a longer period of time.
- Many tutors appreciated the structure of Read Right, and perceived that this was particularly effective for struggling students. They also cited the low student-teacher ratio and accessible curricular materials as important in helping these students
- Challenges for some tutors included staying on script all the time and working with low-intent students. Not all used the disengage protocol as intended by Read Right.
- Read Right training was frequently perceived as high quality, intense, and effective. Almost all tutors felt it adequately prepared them to work with students. When tutors had questions after training, they typically said they were able to get the answers they needed.
- While trainers were largely seen as knowledgeable and encouraging, there were many concerns about inconsistency in their interpretations of Read Right. Variations typically hinged on degrees of adherence to the manual. Tutors also reported inconsistency in the quality of trainers' interactions with school staff.
- When not all eligible students could receive Read Right, decisions about placement were made in slightly different ways at different schools. All decisions involved test score data. Beyond testing, teacher recommendations, grades, ELL status, special education status, attendance records, and behavior issues were also used as criteria for placement in Read Right.
- In addition to capacity, scheduling was a concern at some schools. Sometimes students were retained in Read Right after graduation due to scheduling, and sometimes they were graduated early to make room for new students.
- While many tutors said they followed the Read Right protocols for moving students among color levels and/or graduating them, there was some confusion about when to do so and not all tutors were consistent.
- Students almost uniformly said that the purpose of Read Right was to "become a better reader" and believed that it was successful in achieving this purpose. As a result, they said that they were more confident reading aloud, were more fluent readers, had larger vocabularies, and understood more of what they read.
- Principals also thought Read Right was effective, which they based on many different sources of input: the Gates-MacGinitie results, progression through color levels, graduation rates, talking to tutors, grades, and their own classroom observations. Perhaps as a result, they were almost unanimous in their desire to keep Read Right at their schools.

CHAPTER 6: TUTOR, PRINCIPAL, AND STUDENT VIEWS OF READ RIGHT

Each year Read Right classrooms go through a cycle of implementation. Each step in this cycle is important to successful implementation. The steps include training tutors, placing students in Read Right, tutoring students, helping students progress through the leveled reading books, and finally "graduating" students from the program at the end of the school year.

This chapter provides information about tutors', principals', and students' views of Read Right throughout the year. It also describes the role of the tutor and participants' views of the overall success of the program.

The Role of the Tutor

Tutors in the nine schools that participated in the survey had been Read Right tutors for an average of two years, with a range of one to three years. These tutors were predominantly female (91%) and white (89%); those who were not white were African-American (11%). More than half (62%) were certificated teachers.

Most tutors said they enjoyed being a Read Right tutor (85%); however, some did not (15%). The most common thing that lead tutors liked about their jobs was seeing student growth:

> *I like that I can physically see my students growing as readers. (Lead tutor)*

> *I like seeing the improvement that they have made.... I now have a program that's making a difference. (Lead tutor)*

Lead tutors also appreciated that the structure of Read Right meant that there was "no planning or grading" and that "I know what I'm going to do every day, which is kind of nice." They also enjoyed the interaction with students, enhanced by working with them in a small group setting rather than "having 26 kids in a class."

> *You bond with the kids a bit. We are a family, a little cluster in our school. (Lead tutor)*

Tutors' sense of their effectiveness in the classroom—or their "efficacy"—was measured using Hoy and Woolfolk (1993). This survey has items that measured tutors' sense of their own effectiveness in Read Right, called "personal teaching efficacy," as well as their beliefs about the effectiveness of teachers in general, called "general teaching efficacy." These items used a scale of 1–6 in which 1 was strongly agree, 2 was moderately agree, 3 was agree slightly more than disagree, 4 was disagree slightly more than agree, 5 was moderately disagree, and 6 was strongly disagree.

In general, the survey showed that teachers were fairly confident in their sense of both their personal effectiveness (2.0 on the 6-point scale) and in their sense of the effectiveness of teachers in general (2.7 on the 6-point scale). These scores indicated slightly stronger agreement than among teachers who have been surveyed in other settings (Hoy & Woolfolk, 1993). In addition, their agreement with items about their personal effectiveness in the Read Right setting was slightly stronger than their views of general teacher effectiveness.

Being a Read Right tutor did not come without its challenges, however. Although they appreciated the structure and perceived impact of Read Right, lead tutors also said its repetitiveness was sometimes "boring" and it was a struggle for them to stay attentive. Similarly, some found it was challenging to stay on script all the time, either because it was tedious, because they wanted to do something different instructionally, or because they wanted to take time to build relationships with students.

> *The repetitiveness of it is a challenge. I don't get to do anything different. You try as hard as you can to be focused and not waste time, but it's hard sometimes to not just talk about the story. (Lead tutor)*

> *The Read Right people want us to be on task all the time, but that is not real life. You sometimes have to take into consideration all the problems that students come into school with. But it is frowned upon if I take five minutes to check in with a student about how they are doing. (Lead tutor)*

Some tutors also found it challenging to work with behavioral issues and difficult, or "low-intent," students. They had several mechanisms for doing so, including the Read Right disengage protocol. According to this protocol, if a student is not participating in Read Right appropriately, the tutor tells the student to "disengage." This means that the student should close his or her book and sit quietly until the tutor checks in with the student. After a few minutes, the tutor asks the student if he or she would like to resume tutoring. If the student says no, the tutor tells the student to continue to sit quietly but to tell the tutor if he or she would like to continue tutoring. If the student says yes, tutoring resumes as if nothing has happened (Tadlock, 2008).

> *I was surprised at how well disengagement worked. Most of them come back in because they get bored and want to be part of the group. (Lead tutor)*

However, several tutors said they used the disengage protocol in combination with other methods:

> *There is a guideline that you disengage them, but sometimes that doesn't work because they want the attention and will do anything to get it. At that point I call home, take them for a walk, or take them to the office. (Tutor)*

A few said they ignored the disengage protocol and used other methods, including removing students from Read Right:

> *I work with them and pump them up for how well they are doing. I give Read Right three to four weeks. If it doesn't work, I do a different reading program. I can't take it if they are disengaged for several days. (Lead tutor)*

Tutors also acknowledged, however, that certain aspects of Read Right were particularly effective with difficult students and/or students who faced personal challenges in their home lives. Specifically, they cited:

- The low teacher-student ratio
- The structure Read Right provided
- The accessible curricular materials

While most said that any education program can only go so far in addressing the multiple challenges some students face outside of school, they also said Read Right was in some ways better suited to help than the broader school context, in which class sizes were large, the structure more fluid, and the curriculum more difficult.

> *I think one of the advantages with Read Right is students know what to expect and they know what to do. With this program, it doesn't matter if you had a bad day or didn't have breakfast. If you*

do what you're asked to do your brain will remodel itself and you will be successful. (Lead tutor)

Read Right tutors were generally held in high regard in their buildings. Most tutors (75%) felt that being a Read Right tutor was respected in their school. Students almost universally found the tutors very helpful (94%) and thought the Read Right tutors cared about them; they appreciated that the tutors were supportive, wanted them to be excellent readers, and made them feel comfortable and confident reading.

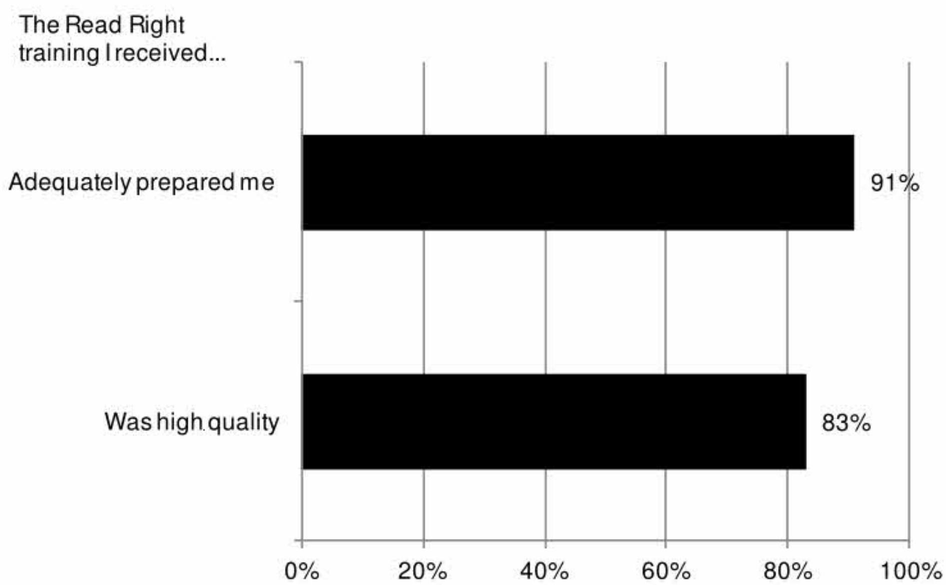
Tutors were divided regarding how much longer they saw themselves working as a Read Right tutor. Many said for a long time (38%) or a few more years (32%). However, some planned on "not much longer" or only another year (29%). Those who enjoyed being tutors were more likely to plan on continuing in that role for a longer period of time.[12]

Tutor Training

Tutors participated in 7 weeks of training over 18 weeks. Each was required to pass a tutoring "test" to be certified. In this test, the tutor was observed during tutoring by a tutor trainer and rated on performance. Tutors' views of this training were collected through interviews with the lead tutor at each of the nine schools and through surveys of all tutors.

Feedback on training. Most (78%) reported they received their initial training in spring 2008 or fall 2008. The remaining tutors said they received their initial training earlier

Figure 6-1



Tutor Feedback on Training

[12] $\chi^2(9, N=33) = 27.354$, $p = .001$

(fall 2007, 10%) or later (spring 2009, 13%). Almost all tutors said that the training adequately prepared them to be Read Right tutors, even if they were slightly "nervous" to start the program without "someone right there to ask questions of." The strong majority of tutors also felt the training was high quality (Figure 6-1).

Many tutors said that the training was "intense" and a "challenge." Most liked and appreciated this aspect, finding that in turn this meant that the training was "very thorough" and "we didn't end up with a lot of unanswered questions." They added that the length of time was "just about right" due to the volume of material that needed to be covered. However, some were taken by surprise— "we didn't know what we were getting into when we walked in, and the day was just very, very long"—and found they were "in a haze" by the end of the week.

Tutors widely appreciated the training structure; specifically, that it was "hands-on,"at their location, and taught in steps that built over time.

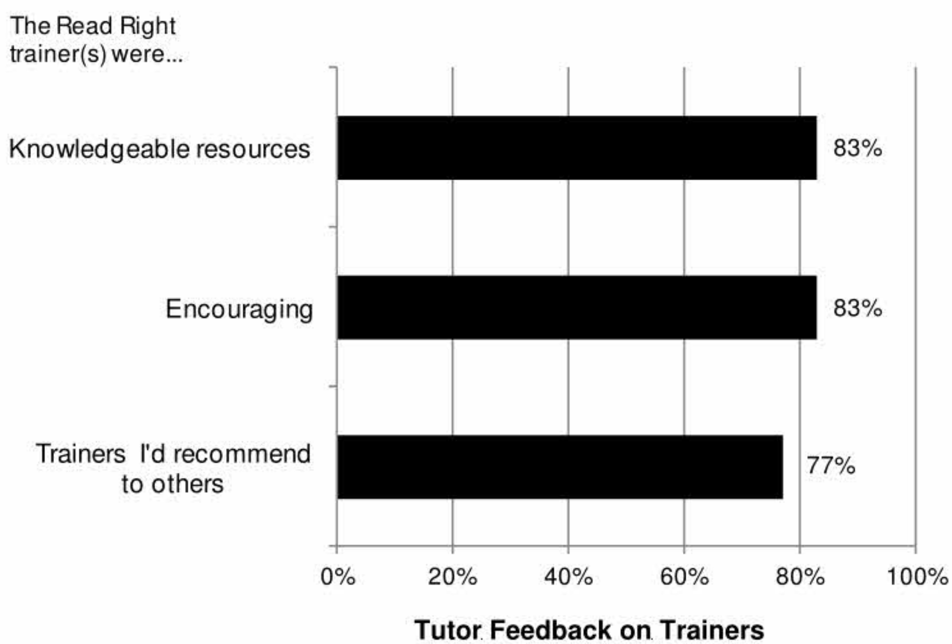
It was introductory in the beginning, but very quickly you were doing it. Almost from the get-go you were working with students. You do one part, they model, you implement, and they coach you and correct. You can ask questions all the way through. I appreciate that. (Lead tutor)

I liked that it was continual over a period of time so that we could digest it. It wasn't all frontloaded. (Lead tutor)

Some tutors also appreciated that the training started with the research background and theory behind Read Right. They liked seeing how Read Right fit into what they already knew about reading, which gave them a framework and "place of association."

Feedback on trainers. Tutors had generally positive feedback on the trainers with whom they worked (Figure 6-2). Most felt they were knowledgeable resources about Read Right and reading and were encouraging as new tutors learned how to deliver tutoring to

Figure 6-2



students. The majority (77%) said they would recommend the specific trainer(s) to other tutors.

However, a strong theme in the interview data was the inconsistency among trainers regarding their interpretations of Read Right. Variations typically hinged on adherence to the manual, "personalized stylings," and "tutor prerogative."

> *Our training was not very consistent, we had several different trainers. They were of differing quality. Two of them were very tough on us, which I liked, and two of them weren't very strict with the protocol. (Lead tutor)*

> *Read Right trainers seem to interpret Read Right differently. Every time we'd get a new trainer they'd tell us that what we were doing wasn't right. Then the next trainer would come and contradict the last one. So it ends up that you just do what you need to do to please the current trainer and then figure out what you want to do when they leave, because they can't agree. (Lead tutor)*

Tutors also noted inconsistency among trainers in terms of their personal interactions with school staff. While some were considered "good trainers" who built positive relationships, others were seen as authoritarian and "almost abusive" to both trainees and students.

> *I liked our trainer. She was very good at modeling and correcting us. (Lead tutor)*

> *I felt the trainer was not willing to listen to my concerns. I felt scared to ask questions. (Lead tutor)*

> *Our trainer was terrible. She had the worst tableside manner and was demeaning, rude, and disrespectful. (Lead tutor)*

Following the training, tutors had multiple resources for finding answers to any questions that arose. It was common to talk questions over with other tutors at their school; 88 percent of tutors said they resolved questions in this manner. They also called or e-mailed their trainer and/or the Read Right office; tutors commented that they always received an answer "within a day or two." Attending the national conference and even sometimes e-mailing Dee Tadlock were also mentioned. Other than a slight challenge with the time difference between Washington state and Nebraska, tutors reported little dissatisfaction about getting questions answered.

Suggestions for future training. Tutors offered several suggestions to make Read Right training even better. Their primary suggestion was to establish a consistent protocol across all trainers. A related point was that district trainers should be held to the same standards as those from Read Right in Washington.

Second, they suggested that trainers should be "more congenial" and open to questioning, and those who were particularly negative be eliminated. Some added that trainers needed to show respect to trainees, particularly in front of students.

Third, tutors suggested that trainers have a background in education, understand the school environment, and be knowledgeable about district policies.

> *Trainers from Read Right should have a background in education. They are good at following the steps for Read Right but do not do well when faced with differences that come up between schools and student populations. Their overall lack of knowledge about the social-*

emotional development and academic skills of students created a tense and at times unproductive climate in the classroom. (Lead tutor)

Finally, a small number of tutors suggested that the Read Right trainers return annually for a few days or a week to check in and "make sure we are doing everything right" or "tweak us a little."

Placing Students in Read Right

Students are eligible for Read Right in Omaha public secondary schools if they are at least two grade levels behind in reading, and/or are ELLs, and/or are special education students. However, there are often more students who qualify for Read Right then there is space in the school's Read Right classrooms. In interviews, principals described who was placed in Read Right, especially in light of limited resources.

Principals in all nine schools participated in interviews. They had been principal in their buildings between one and nine years, with an average of four years.

In general, principals were moderately knowledgeable about Read Right, meaning they understood what it looked like and were "comfortable explaining it to parents." They gathered their information from talking to trainers and tutors, observing the program at their schools, talking to other principals, reading about it, and seeing presentations at conferences.

When there were limited resources for Read Right, decisions about who received Read Right were made in slightly different ways at different schools; however, all decisions involved test score data. Beyond testing, teacher recommendations, grades, attendance, and behavioral issues were also commonly used as criteria for placement.

However, this was not always the case. For example, at one school, students were prioritized as follows: ELLs; those eligible for special education; students who had been in Read Right in the past but had not graduated; students who were at least three years behind but did not fall in any of the prior categories.

Decisions about inclusion in Read Right were made by counselors, teachers, principals, assistant principals, and data administrators. These decisions were sometimes made as a team, and sometimes by one or two people. For example, at one school, students were "hand-selected" by the assistant principal to participate, then further screened by the counselor. At another school, the principal described the selection process this way:

It's really a team-oriented decision. The literacy teachers and other core teachers have some input. Then ultimately, it's up to me, the data administrator, and the Read Right tutor. (Principal)

Although it was not explicitly asked, a few schools added that they had waiting lists for Read Right; sometimes these students received Tier 2 interventions, which in Omaha are intended for the students who are reading below grade level but above the students typically identified for Read Right. At one school, they graduated Read Right students early and moved them into Tier 2 interventions to make room for new students.

Tutoring Students

Tutors and students were asked in person and on surveys about the tutoring experience. From the tutor's perspective, the program was generally easy to implement, after the first few weeks were over.

Tutoring is initially difficult. There's a lot of information to know, and you have to be mindful of it all. (Lead tutor)

The whole program is very straightforward. Once the first few weeks are over, routines are in place. Then it's easy, and the kids are used to what is expected of them. (Lead tutor)

Tutors and students had differing feedback about the three components of their work together: excellent reading, coached reading, and critical thinking.

Excellent reading. Most respondents felt that while determining excellence was relatively easy, cycling was more of a challenge. Almost all tutors (91%) and students (90%) said they were able to recognize an excellent read. Some tutors, on the other hand, noted that teaching students how to cycle correctly was one of the more difficult aspects of Read Right implementation.

Cycling is the hardest part to implement. The students won't follow the steps. Just like any teenager, they think they know better. They will just listen over and over. (Lead tutor)

In their view, students generally acknowledged that cycling was helpful, at least "kind of" or "sometimes," and particularly when kids "did it right."

I hate it, but it actually helps. You listen to a paragraph and read along. You pause it and go back and read to yourself and judge it if you read well. (Student)

In particular, they valued that it helped them learn the words they did not already know and increased their comprehension.

It's good that you listen to someone read before you read. If you don't know that word, then the person says it. Then, when you read it to the tutor, you know it. (Student)

If you read through it, it helps you understand it more. (Student)

A few added however that it was difficult, that they "hated it," and that not all students cycled "correctly." Some students just pretended to cycle, and sometimes they "recited it from memory."

Coached reading. While some tutors found coached reading relatively easy, others found it challenging. Virtually all tutors (97%) felt they could easily identify a student's symptoms during coached reading.

At first coaching was hard, but the more you do it, the more comfortable you get. (Tutor)

In interviews, however, a few said that this was one of the more difficult aspects of Read Right, particularly the "skip it" strategy that is used when a student gets stuck on a word.

I've had some trainers that say 'pounce on it' and some that say 'give one or two seconds.' Do you give the brain a chance to figure it out? It's real tricky. Sometimes the kids just give a short little pause. (Tutor)

I think everyone struggles with the coaching component. Maybe it's because we only get a limited time to do it before the consultant leaves. (Tutor)

Critical thinking. Tutors were also divided regarding the relative ease or difficulty of critical thinking. While most (76%) said they had no difficulties directing student groups during critical thinking, almost one-quarter (24%) did not agree.

Critical thinking is cut and dry, it's not scripted [like the other components], so it's easier. (Lead tutor)

I have a better chance at pulling teeth than I have to get them to do critical thinking. (Lead tutor)

Student Movement Through Color Levels

In Read Right, students progress through six color levels, until they complete the last color level and/or graduate from the program. The Read Right training manual directs tutors to move a student up to the next color level when the student consistently does "excellent" reads in one to three cycles. However, it adds that there is room for tutor discretion:

The number of cycles required to achieve excellence is meant to be a guideline—not a hard and fast rule. Inexperienced tutors tend to over-rely on the guideline. Although the numbers are useful, please consider the student's over-all performance when deciding what to do. With time and experience you will develop a sense that the student is working too hard or not hard enough. (Tadlock, 2008)

Many interviewed tutors said they followed the protocol laid out in the manual:

I thought that was fairly easy to determine—when they're cycling and getting excellent in less than three cycles, and you've picked the hardest books in the color. (Lead tutor)

Others had slight variations, for example using three to five cycles instead of one to three, also considering students who have "excessive tallies in the excellent box," or adding a step in which another tutor listens to the student to confirm the first tutor's decision.

Let's say they are lime and are reading excellent on almost every read they have, and they cycle three to five times and every read is excellent, even when you give them a more difficult book in that color level, then it is time to get moved up. (Lead tutor)

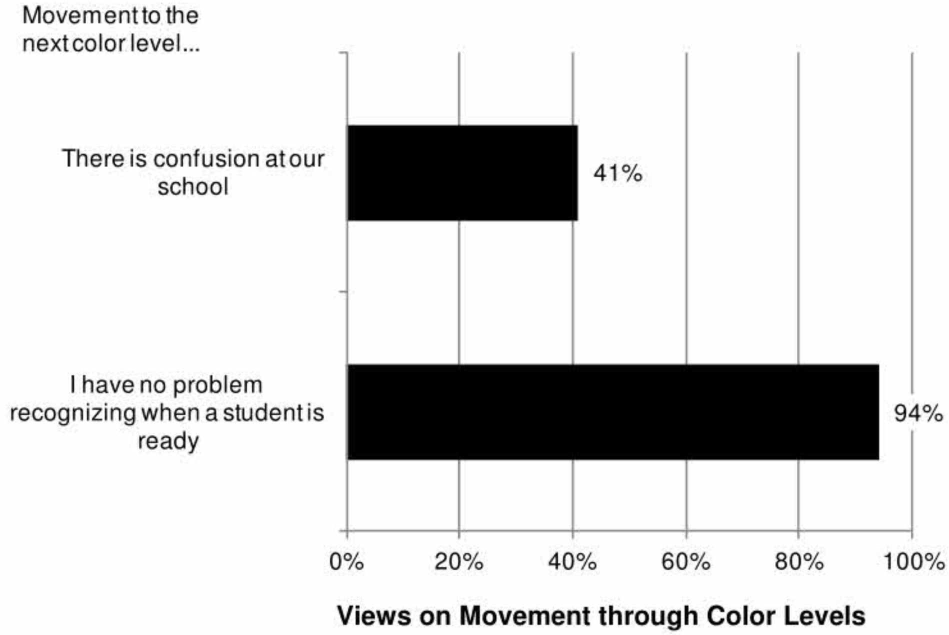
If they have to cycle less than three or four times, most of their excellent reads are on the top of the tally sheet. We usually have another tutor listen before we move them up, so we're ready to move up. (Lead tutor)

Many lead tutors had concerns that not all other tutors at their school followed the same protocols as they did. While almost all tutors (94%) said they themselves had no problem recognizing when a student was ready to move, many (41%) said there was confusion at their school about when to do so (Figure 6-3).

Specifically, lead tutors who participated in interviews had concerns that other tutors moved students up too quickly. Most often, this was attributed to other tutors having a difficult time determining text complexity or wanting to reward students.

I don't have any [concerns about myself], but I've noticed that some of my paras move students more quickly than they should. But that may be that paras don't have a sense of the text complexity. (Lead tutor)

Figure 6-3



> *I think some people move them too quickly. They will see they are progressing, and we will get over excited about it and move them on when they aren't ready for it. (Lead tutor)*

When students were moved up too quickly, some saw that there were negative ramifications. Students were not learning in the intended way, became easily demoralized by texts that were too difficult, and/or were upset when they had to be moved down to a lower color level.

> *This isn't a contest, especially with ELLs. There is nothing to be gained unless they really meet the criteria. (Tutor)*

A prior study of Read Right in Omaha (Scott, Burke, & Deussen, 2009) also suggested that tutors were inconsistent in the way they moved students through the color levels. The study found no statistical relationship between the color levels at the end of the semester and students' Gates-MacGinitie Reading Comprehension Tests at the semester's end. This means that some students' color levels were higher than their Gates-MacGinitie ending grade-level equivalencies, while some were lower (Scott, Burke, & Deussen, 2009).

Graduation from Read Right

According to the Read Right manual, students graduate from Read Right if the following criteria are met:

- No pattern of symptoms (two or more of the same event) emerges as the student reads in coached reading. (Reminder: Appropriate text deviations are not symptoms.)
  - This criterion must be met with harder books in the graduation range unless the language in the harder books is beyond the student's current vocabulary level.
- Disturbances may emerge.
  - You should identify a disruption in the student's reading as a disturbance only if you are certain it is not a symptom (Tadlock, 2008).

During graduation, students also make audiotapes of themselves reading and compare them to the tape they made when they entered Read Right.

Similar to their views on movement through color levels, almost all tutors (85%) said they themselves had no problem recognizing when a student was ready to graduate, but many (53%) said there was confusion at their school about when to do so (Figure 6-4).

When asked about how they knew when a student was ready to graduate, most lead tutors referred to the manual and/or the point during coached reading at which a student could "read excellently in cold text without patterns of symptoms."

> *I would have to get my manual. But in general, [you graduate them] when you are coaching a student and there is no pattern of two or more of the same symptom. (Lead tutor)*

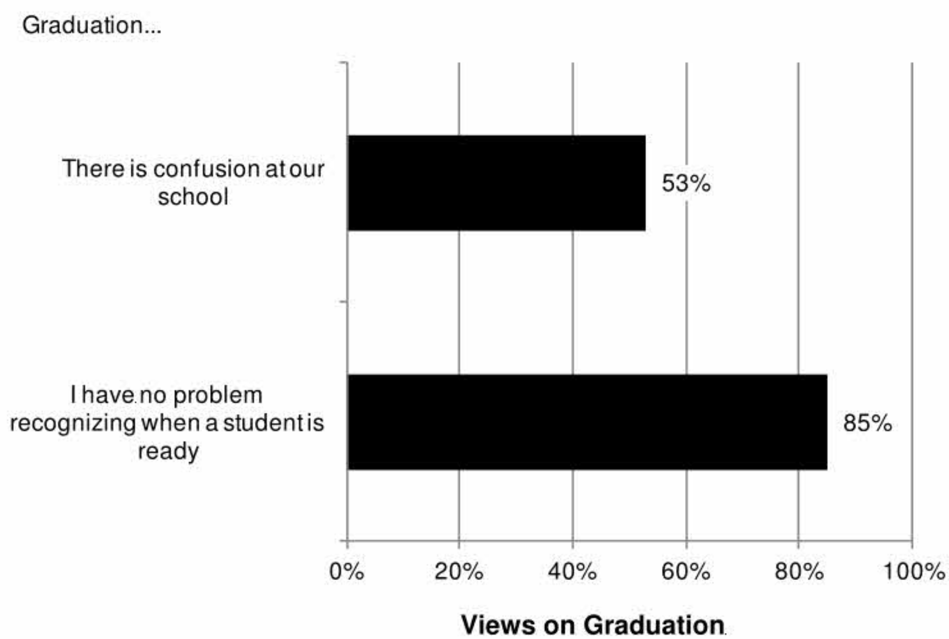
> *[You graduate them] when they are at a level that is fitting or appropriate, and they have a good notion of excellence themselves. Then, if their coached reading is relatively smooth, they graduate. (Lead tutor)*

There was also some confusion around graduation criteria. At a few schools, this was called a "gray area" in which they requested more clarity.

> *Towards the end of the training, I was left hanging in terms of graduation. (Lead tutor)*

> *Originally they wanted all students to make it through purple into yellow. The next set of trainers said you could graduate them in any color, which to me was opposite. So we asked Read Right and that created more confusion. Now I simply exit students. (Lead tutor)*

Figure 6-4



Some tutors—even those who felt they understood the graduation procedures— said they had a challenging time when students had a "language cap" or "limited vocabulary." This was particularly, although not exclusively, true for ELLs.

> *If a student has limited vocabulary, is the next range going to be beyond their vocabulary level? Some tutors struggle with, 'should I move them up or graduate them?' (Lead tutor)*

A handful of tutors said that they had not graduated any or many students, and some said that there were scheduling or administrative challenges to graduating students. One said that this was in fact the most challenging thing about implementing Read Right: "If we graduate them, will they be in this class or scheduled into another class?" At another school, the lead tutor reported that the principal did not allow students to leave Read Right midsemester, even after they graduated.

Impact of Read Right in Participants' Views

Students almost uniformly said that the purpose of Read Right was to "become a better reader." A few mentioned that Read Right was supposed to help particular aspects of reading, such as comprehension, oral reading fluency, and "learning new words."

> *They are trying to get us to understand what we are reading instead of just looking at the words and reading them. (Student)*

> *If you have to read a book out loud for another class, you will read it correctly, like this [demonstrates] and not with lots of pauses and 'ums.' (Student)*

Other responses, voiced by only one or two students, were that the purpose was to "get to a higher level" (emphasizing the progression through color levels), not make mistakes, help with enunciation, "help me talk," and "help me feel more comfortable" when reading.

Students also believed that Read Right was successful in achieving this purpose; 90 percent said that Read Right helped them become a better reader. As a result, they found that they were more confident reading aloud in other classes, were more fluent readers, learned "like a million words," and pronounced words and enunciated more correctly. Some also added that Read Right "helps you learn more" and "understand what you are reading."

> *Now when a teacher asks you to read or says, 'Who wants to read?' you can raise your hand. (Student)*

> *I don't go so fast anymore…I don't skip punctuations. (Student)*

> *You can understand it and feel comfortable. That wasn't like last year. (Student)*

Principals were all over the map regarding how they knew Read Right was working to improve student learning. Only half of principals said they used the Gates-MacGinitie assessment data to determine if Read Right was working with their students. They were also divided regarding whether the Gates data were useful. Many principals said they didn't see the Gates data; one said they didn't know what the Gates was. Another commented that the utility of the Gates was limited because results were usually four months late. Others, however, did see and use Gates testing results and commented on their usefulness, either on their own or in combination with other assessment data.

> *Yes, they are very useful. Read Right sends us reports that show their grade equivalent improvement. We input it into the computer and track it, so you can see the growth. (Principal)*

> *I use some of the data that comes from Read Right itself. Also, we pre and post all the students. (Principal)*

Beyond the Gates, principals said they used information on progression through color levels, graduation rates, conversations with tutors and teachers, grades, and their own classroom observations.

> *Tutors see great gains and improvement in kids. They realize it works. There is nobody saying this program isn't working. (Principal)*

> *[I can tell Read Right works] by the number of students who graduate out of it. Those data are shared with me. You also have to look at their grades. And look at whether the students are better off than when they stepped in. (Principal)*

> *I get my information from teachers. So far, it's been positive. When a kid graduates, I assume they have made improvement. (Principal)*

Impact on subgroups. There was a perception that Read Right had a differential impact on subgroups of students. More than one-fourth of tutors (27%) thought that Read Right was not necessarily effective for all struggling students, and virtually all tutors (97%) agreed that some students responded better to Read Right than others.

Most tutors (77%) thought Read Right was just as effective for ELLs as for native English speakers. In fact, some said Read Right was even more beneficial for ELLs than for native speakers. Others said that while Read Right was not necessarily better for ELLs than native speakers, it was more effective with ELLs than other programs they used in the past. Specifically, they said ELLs were "very receptive" because they "are motivated to learn the [English] language" and "want to practice." Others commented on the acquisition of vocabulary in Read Right as being important for these students.

> *When I started in Read Right I couldn't even speak fluently. Now I can read a paragraph. (ELL student)*

> *Everyone is in the same boat, but I think the ELL kids really do like the program because they see a real difference in themselves. (Lead tutor)*

Perceptions of Read Right's effectiveness with students eligible for special education were also divided; 68 percent of tutors felt that Read Right was as effective for special education students as it was with other students. However, some tutors clarified in interviews that special education students were making notable gains.

> *With special education students, I see them making gains [with Read Right] that I didn't see when I was a regular teacher. (Lead tutor)*

> *For the most part special education kids are receptive to it. By the time they are in high school, they know that they have a learning disability and want to get better. (Lead tutor)*

At the same time, some tutors said that Read Right was not quite as effective for "the really low kids" and students with "severe reading problems" for whom "it's awfully hard." Others perceived that Read Right was not as effective for students with behavior and motivation difficulties.

The Future of Read Right

The future of Read Right at the participating schools looks positive; principals were almost unanimous in their desire to keep Read Right at their schools. They said that "it works," "kids are becoming confident," "it is successful for kids who need it the most," and "I've seen improvement." One added that this improvement was "carrying over" into other subjects as well as recreational reading.

The number one thing that tutors said they needed in order to make Read Right even better at their schools was more materials. There were frequent comments about aging materials that broke and/or wore out quickly, and about the need for more selection of texts within the color bands. More than one third of tutors (35%) said they did not have all the materials in their classroom that they needed to implement Read Right the way it should be done. Accordingly, tutors wanted more books, MP3 players, and a structured process for ordering more materials.

Secondarily, there were issues that pertain to buildings rather than Read Right. Foremost among these were requests for more space, followed by scheduling challenges, as well as a desire to target the program more directly to the neediest students. Budget was also a concern for a few principals, particularly in light of shrinking availability of funds. These principals had opposite strategies; for example, one principal said the school would do anything to retain Read Right ("I've made a lot of sacrifices in my budget to keep Read Right"), while another said that Read Right was the last thing added and it would be the first to go.

A final suggestion addressed the computer system. It included a desire for the Read Right system "to work as excellently as the program" and connect with school records.

CHAPTER 7: RECOMMENDATIONS

Omaha Public Schools (OPS) had many successes that can be attributed to Read Right in the 2009–2010 school year. In addition to these successes, this evaluation found some challenges to implementing Read Right in OPS and in interpreting Read Right's results. Successes and challenges are described below, along with associated recommendations.

Successes: This evaluation found that:

- When compared to a control group, Read Right students had significantly higher reading achievement on the Gates-MacGinitie Reading Comprehension Test
- More hours of Read Right tutoring predicted higher posttest scores
- A larger proportion of students who participated in Read Right reported they read for fun almost every day compared to students in the control group
- Most students, tutors, and principals had positive views of Read Right

Recommendation 1. OPS should continue Read Right and perhaps expand the program, but this expansion should be done cautiously. OPS should prioritize expansion to settings that are most similar to the settings in this evaluation (i.e., traditional middle and high schools in the district). If OPS expands Read Right to dissimilar settings—such as afterschool programs or alternative schools—OPS should include an evaluation component in order to ensure that Read Right also works well in these new settings. OPS should continue to participate in the same level of training and technical assistance from Read Right, in order to ensure continued high-quality implementation. Finally, OPS should develop a clear structured process for ordering new and/or additional Read Right materials such as MP3 players and books. This will help maintain the quality of current Read Right classrooms and ensure the quality of future expansions of Read Right in Omaha.

Challenge. This evaluation found that at the school level, the effects of Read Right varied somewhat. In three of the four schools, the treatment group outperformed the control group on the posttest, although this effect did not reach statistical significance in one of the three schools. In the fourth school, the control group outperformed the treatment group although this difference was not statistically significant. The evaluation was not able to determine exact causes for differences among schools; however, further examination of the data suggested that differences may have been due to the larger numbers of Latino and ELL students concentrated in two of the schools. (These students tended to respond less well to Read Right). Another factor may be lower average total tutoring hours in these two schools.

Recommendation 2. OPS should continue to monitor the achievement of Latino and ELL students, as well as the total number of tutoring hours students receive. Because this evaluation could not determine the exact reason for variety in school-level results, it is especially important that OPS continue to monitor student results. Particularly in schools with large Latino and ELL populations, OPS should pre- and posttest all students using the Gates-MacGinitie Reading Comprehension Test and continue to collect data on the number of hours of tutoring received. The schools should then use the pre- and posttests to monitor the progress of students, giving special attention to Latino and ELL students and to students who receive fewer than the average number of tutoring hours. While pre- and posttesting all students will add to the expense of implementing Read Right, it will also help ensure that OPS knows how Read Right is impacting most students, as well as individual students who may need additional intervention.

In order to ensure that pre- and posttest scores are recorded in a timely manner, OPS should consider training tutors to hand score each assessment informally before sending the assessment to Read Right for formal scoring. Hand scoring is relatively simple and would allow schools immediate access to results.

Challenge. Most tutors valued the Read Right training they received. However, many expressed concerns about the inconsistency of trainers' interpretations of Read Right. In particular, tutors were confused by the variations in the degree of adherence to the tutor manual. Some tutors also reported concerns about what they perceived as some trainers' disrespectful behavior when interacting with school staff and students.

Recommendation 3. Read Right should review consistency across trainers, and OPS should create a constructive way for tutors to relay any concerns or questions about training. Because the training overall appeared to be effective and appreciated, Read Right's review of trainers should focus on removing inconsistencies of interpretation and on ensuring appropriately assertive but respectful training demeanor. In addition to this review, OPS should designate a district administrator to whom Read Right tutors can express concerns or questions about training. These concerns or questions could then be communicated to Read Right.

Challenge. Decisions varied about moving through the Read Right color levels and about graduating students from Read Right. While many tutors said they followed the Read Right protocols for moving students among color levels and/or graduating them, there was some confusion about when to do so and not all tutors were consistent.

Recommendation 4. Read Right should retrain tutors on moving students through color levels and graduating students, and OPS should ask tutors to make team decisions about these issues until tutor decisions become more consistent. It may be that retraining will make these decisions clearer for tutors. Temporarily asking that at least two tutors listen to a student read before that student moves up or graduates may also help tutors develop a shared view of when movement or graduation is appropriate. Some tutors reported they are already making team decisions about movement and graduation at their schools.

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APPENDIX A

Gates-MacGinitie Methodology

Student Attrition. Table A-1 reports the numbers of students assigned to the treatment and control groups at each school, as well as the percentage of students lost to the study over time, which is referred to as "attrition." Consideration of attrition is important because the number and type of students who are lost from the study affect the degree to which the study results are credible and generalizable. Strong efforts on the part of the schools and the district helped ensure that the attrition rate from pretest to posttest was 6 percent which, by convention, means that the internal validity of the study is considered strong (Valentine & McHugh, 2007). Internal validity refers to the credibility of the study, or the ability to know that any effect is due to the treatment rather than to other characteristics of the students.

Table A-1
Student Attrition From June 2009 Through January 2010[13]

School	Students Assigned	Students Pretested	Students Posttested	Student Attrition, Pre- to Posttest
School 1	150	98	93	5%
School 2	164	130	120	8%
School 3	147	117	117	0%
School 4	120	105	94	10%
All Schools	581	450	424	6%

The attrition from selection to posttest was 27 percent (not shown in Table A-1). A recent reanalysis of data from 35 randomized controlled trials suggests that this rate is acceptable (Valentine & McHugh, 2007). A further examination of the data revealed that the majority of students lost from assignment to pretest (80%) were lost because they never enrolled in the school or they transferred before the pretest was given during the first week of school. It is likely that these students left the study for personal reasons (e.g., their family moved) rather than any factor within the study. If these students were removed from the calculation, the total attrition rate would be 11 percent, which is considered good (Valentine & McHugh, 2007). While attrition due to students who did not enroll or who transferred before the pretest does not affect the internal validity of the study, it may weaken the external validity. In other words, the study results do not generalize as easily to the subgroup of students who are highly mobile as they do to the majority of students who are less mobile.

In considering attrition, it is also important to examine differential attrition, or the difference in attrition between the students in the control group and the students in the treatment group. The difference between attrition of treatment and control groups from the pretest to posttest was 2 percent, and the difference from selection to posttest was 4 percent. In both cases, more students in the control group were lost; however, both attrition rates are considered acceptable (Valentine & McHugh, 2007). In other words, they were small enough that they were unlikely to have caused the two groups to differ a great deal from one another.

[13] This table includes two control group students that participated in more than 10 hours of Read Right and five treatment students that did not get the treatment. Inclusion of these students is typical in an "intent to treat" design and is used to provide an unbiased estimate of the effects of the treatment by preserving the random assignment (Lachin, 2000).

Data Analysis. The model for the first analyses of the student achievement variables was represented with the following equation:

$$Y = \beta_0 + \beta_1[\text{Treatment}] + \beta_2[\text{Pretest}] + \beta_3[\text{School1}] + \beta_4[\text{ School2}] + \beta_5[\text{ School3}] + e$$

This equation means that students' posttest scores (the dependent variable) were a function of the following variables: whether students were in the treatment or in the control group (a dichotomous variable), the students' pretest scores on the same assessment, and which of the four schools the student attended. The analysis "fixed" or held steady the slope for the schools, giving the overall effect of treatment while accounting for prior achievement of students and the effect of the schools in general.

School effects. To explore school effects, the data were divided into four datasets, one for each school. For each individual school the following equation was used:

$$Y = \beta_0 + \beta_1[\text{Treatment}] + \beta_2[\text{Pretest}] + e$$

This equation means that at each individual school, students' posttest scores (the dependent variable) were a function of the two variables: whether students were in the treatment or in the control group (a dichotomous variable) and the students' pretest scores on the same assessment.

Effects by subgroups. To determine how the treatment varied by student ethnicity, Education Northwest used five different linear regressions. Each equation used the data only from the subgroup that was being examined (i.e., one equation for African American students, one for whites, one for Latinos, one for ELLs, and one for special education students). All five of these regressions used the following equation:

$$Y = \beta_0 + \beta_1[\text{Treatment}] + \beta_2[\text{Pretest}] + \beta_3[\text{School1}] + \beta_4[\text{ School2}] + \beta_5[\text{ School3}] + e$$

Effect of hours of tutoring within the treatment group. To examine the effects of the total number of reported tutoring hours, Education Northwest used data exclusively from students in the treatment group in the four experimental schools. The following equation was used:

$$Y = \beta_0 + \beta_1[\text{hours of tutoring}] + \beta_2[\text{Pretest}] + e$$

For the students in the treatment group, this means that at each student's posttest score (the dependent variable) was a function of his/her total reported reading tutoring hours while accounting for differences in his/her pretests.

APPENDIX B

Surveys

Read Right Student Survey
Fall 2009 and Spring 2010

Note: This survey was made into a scantron.

This survey is about what you like and don't like about reading. It is part of a study to help your school decide what kind of reading classes to have.

There are no right or wrong answers. Please take your time. The survey is voluntary. So, if there are any questions you don't want to answer, you can skip them. You can stop at any time. Also, no one at your school will know how you answered.

If you have a question, please ask the tutor for help. Since this survey is about what <u>you</u> think, please do not talk or share information with your neighbor until after the surveys have been turned in.

First Name __________________ Last Name ______________________

Student ID Number _________________________________

Grade ___6 ___7 ___8 ___9 ___10 __11 ___12

1. How often do you read for fun on your own time?

- O Almost every day
- O Once or twice a week
- O Once or twice a month
- O Never or hardly ever

2. How often do you talk with your friends or family about something you have read?

- O Almost every day
- O Once or twice a week
- O Once or twice a month
- O Never or hardly ever

3. What is the highest level of education that you think you will get? (mark one):

- O Some high school
- O Graduate from high school
- O Take some college courses
- O A two-year associate college degree
- O A four-year college degree (Bachelor's)
- O Graduate or professional degree (Masters or Doctorate)

Please indicate how strongly you agree or disagree with the following.

	Strongly disagree	**Disagree**	**Agree**	**Strongly Agree**
4. I read because I like to learn new things.				
5. I like learning from books, even if the books are hard.				
6. I want to read better than other students in my classes.				
7. One reason I might not read out loud in my classes is so I don't look stupid.				
8. I like reading best when it really makes me think.				
9. I try hard in class so other students won't think I'm dumb.				
10. I would feel like a good reader, if I read better than other students.				
11. I want to read so I don't look like I can't do my work.				

	Strongly disagree	Disagree	Agree	Strongly Agree
12. I read a lot because I want to get better at reading.				
13. It's very important to me that I don't look stupid in class.				
14. I would feel really good, if I were the only one who could answer the teachers' questions in class.				
15. I do my work in my classes so I won't be embarrassed.				
16. I would like to show my teachers that I'm smarter than the other students in class.				
17. Reading better than other students is important to me.				
18. I read because I'm interested in it.				
19. Reading out loud in class makes me nervous.				

<u>POSTSURVEY ONLY FOR TREATMENT STUDENTS</u>

This semester you were in Read Right. Please indicate how much you agree with each statement.

	Strongly disagree	Disagree	Agree	Strongly Agree
20. I like going to Read Right.				
21. Read Right helps me become a better reader.				
22. Read Right helps me enjoy reading more.				
23. The tutors in Read Right are very helpful.				
24. I know when I do an excellent read.				

25. Read Right is usually boring.				
26. I have friends in Read Right.				
27. I am an excellent reader.				

THANK YOU!

Read Right Tutor Survey
Spring 2010

Note: This survey will be administered electronically.

This survey is part of a study of Read Right in Omaha Public Schools. The questions are about your role in the Read Right program. Your answers will help researchers understand the implementation and outcomes of Read Right. The survey will take about 30 minutes to complete.

Please answer each question. Your answers are completely confidential.

Thank you for your help!

1. How many years have you been a Read Right tutor?

☐

2. When did you receive your initial Read Right training?

- ○ Fall semester 2007
- ○ Spring semester 2008
- ○ Fall semester 2008
- ○ Spring semester 2009

Please indicate the degree to which you agree with each of the following statements.

	Strongly disagree	Disagree	Agree	Strongly Agree
3. The Read Right training I received was high quality.				
4. The training adequately prepared me to be a Read Right tutor.				
5. The training contradicted other types of training I have had on reading instruction. (If you have not received other training, leave this item blank).				
6. The trainer(s) was/were knowledgeable resources about reading and Read Right.				

	Strongly disagree	Disagree	Agree	Strongly Agree
7. The trainer(s) was/were encouraging as I learned how to deliver tutoring to students.				
8. I would recommend the trainer(s) to other tutors.				

9. Please write any suggestions you have for improving Read Right training below.

10. For how long do you see yourself working as a Read Right tutor?

- O Not much longer
- O For another year
- O For a few more years
- O For a long time

11. During a typical week, what percentage of time do you spend on the following:

(note: a plus b plus c should total 100%).

a) Excellent reading ___%

b) Coached reading ___%

c) Critical thinking ___%

Please indicate the degree to which you agree with each of the following statements.

	Strongly disagree	Disagree	Agree	Strongly Agree
12. I enjoy being a Read Right tutor.				
13. I always follow the program as intended.				
14. Some students respond better to Read Right than others.				
15. I can always recognize an excellent read.				
16. I can easily identify a student's symptoms during coached reading.				
17. I have no difficulties directing student groups during critical reading.				
18. Student behavior problems rarely interfere with instruction during Read Right				

	Strongly disagree	Disagree	Agree	Strongly Agree
19. I think Read Right is an effective intervention for *all* struggling students.				
20. I see English language learners making the same kinds of gains as native English speakers. (If you do not tutor any English language learners, leave blank.)				
21. I see special education students making the same kinds of gains as non special education students. (If you do not tutor any special education students, leave blank.)				
22. Students typically become more motivated to read after Read Right instruction.				
23. I have no problem recognizing when a student is ready to move to the next color level.				
24. I have no problem recognizing when a student is ready to graduate from Read Right.				
25. Being a Read Right tutor is respected in this school.				
26. If I have questions or doubts about a particular student, I can resolve them by talking to the other tutors in the classroom.				
27. In our Read Right classroom, we have all the materials we need to implement the program the way it should be done.				
28. Some students just don't like reading even after they have been in Read Right.				
29. There is confusion in our school about when a student is ready to move to the next color level.				
30. There is confusion in our school about when a student				

	Strongly disagree	Disagree	Agree	Strongly Agree
should graduation from Read Right.				

Please indicate your personal opinion about each statement by circling the appropriate response at the right of each statement. 1=Strongly Agree 2=Moderately Agree 3=Agree slightly more than disagree 4=Disagree slightly more than agree 5=Moderately Disagree 6=Strongly Disagree

31. The amount a student can learn is primarily related to family background.	1	2	3	4	5	6
32. If students aren't disciplined at home, they aren't likely to accept any discipline.	1	2	3	4	5	6
33. When I really try, I can get through to most difficult students.	1	2	3	4	5	6
34. A tutor is very limited in what he/she can achieve because a student's home environment is a large influence on his/her achievement.	1	2	3	4	5	6
35. If parents would do more for their children, I could do more.	1	2	3	4	5	6
36. If a student did not remember information I gave in a previous lesson, I would know how to increase his/her retention in the next lesson.	1	2	3	4	5	6
37. If a student in Read Right becomes disruptive and noisy, I feel assured that I know some techniques to redirect him/her quickly.	1	2	3	4	5	6
38. If one of my students can't do the work in Read Right, I can accurately assess whether the materials are at the right level.	1	2	3	4	5	6
39. If I really try hard, I can get through to even the most difficult or unmotivated students.	1	2	3	4	5	6

40. When it comes right down to it, a tutor really can't do much because most of a student's motivation and performance depends on his or her home environment.	1	2	3	4	5	6

41. Please write any additional comments you have about Read Right.

42. At what school do you work?

[list includes Benson, Central, South, Norris, Monroe, Wilson (alternative), Nathan Hale, Lewis and Clark, Brian]

43. Are you a certificated teacher?

O Yes O No

44. Gender

O Male O Female

45. Race/ethnicity (check all that apply)

- O American Indian or Alaska Native
- O Asian
- O Black or African-American
- O Native Hawaiian or Other Pacific Islander
- O Latino or Hispanic
- O White

THANK YOU!

APPENDIX C

Interviews

Read Right Interviews
Principal Interview

Principal Name:
School Name:
Evaluator Name:
Date:

1. How long have you been principal at this school?

2. When did you begin the Read Right program at this school?

3. a. How familiar are you with how Read Right works?

   b. How did you learn this?

4. Read Right is generally described as a "Tier 3" intervention. What can you tell me about how it compares to other Tier 3 interventions you have in the school or may have had in the past? [Note: Tier 3 interventions are literacy programs in addition to regular classes for the lowest 10-20% of readers in the school.]

5. a. What are the biggest challenges to implementing Read Right?

   b. How have you addressed those challenges? (Probes: sufficient resources, space, training of tutors, scheduling)

6. a. Knowing that there are limited resources, how do you decide what students will receive Read Right?

   b. Who makes those decisions? What criteria are used?

7. a. How do you know if Read Right is working to improve student learning?

   b. Are the Gates assessments useful? Why or why not?

8. How do you know if Read Right is working to improve student attitudes toward reading?

9. Would you like to see Read Right at this school in the future? Why or why not?

10. Is there anything else about Read Right in your school that I should know about?

Read Right Interviews
Tutor Interview

Tutor Name:
School Name:
Evaluator Name:
Date:

Background

1. How long have you been a Read Right tutor? __________

Training

2. What did you like about the training?

3. What didn't you like?

4. After the training, how prepared did you feel to begin tutoring?

5. a. After the training was finished, if you had any questions, have you been able to get the answers you need? Please provide an example.

   b. Do you have any suggestions for improving the training?

Implementation

6. What aspects of Read Right instruction are easy to implement? Why?

7. What aspects of Read Right instruction are more difficult to implement? Why?

8. How do you know when a student is ready to move to the next color level? (Prompt: If you are unsure about whether to move the student what do you do?)

9. Are there any concerns about moving students to the next color level?

10. How do you know when a student is ready to graduate?

11. Are there any concerns about graduation? If so, what?

12. How confident are you that you always follow the Read Right methods correctly? What makes you say that?

13. a. Have there been times when you've had to modify, add to, or change the Read Right methods? Please describe.

    b. How often has this happened?

14. Have you had any concerns about the way that other tutors implement Read Right? Please describe.

15. Is teacher resistance to Read Right an obstacle to implementing the program? If so, please describe and provide suggestions about how to overcome this resistance.

16. What else do you need to make Read Right even better?

Student Motivation and Attitudes

17. How do students respond to Read Right?

18. Is this the same for all students? (Probe: English Language Learners and special education)

19. Can you describe a student who you feel Read Right has been very successful for this semester? (probe for changes in attitudes/behavior/motivation)

20. Can you think of a student who has not had the same kind of success? If so, what do you think is interfering with success for this student?

21. What interactions, if any, do you tend to have with the parents of Read Right students?

Tutor efficacy and attitudes

22. What do you like about being a Read Right tutor?

23. What is challenging about being a Read Right tutor?

24. How do you deal with difficult students?

25. Some students face many personal or family challenges that can make school hard for them. To what degree do you think Read Right or other instruction at school can help students overcome those challenges?

26. Is there anything else I need to know about how you implement Read Right or the effect it has on students?

APPENDIX D

Student Focus Group

Read Right Interviews
Student Focus Group Protocol

School Name:
Evaluator Name:
Date:
Color Levels:

[NOTE: Find out ahead of time the names and the color (level) of each student who will be participating.]

This discussion will be about what you like and don't like about reading and about the Read Right program. It is part of a study to help your school decide what kind of reading classes to have.

There are no right or wrong answers. Your participation is voluntary. So, if there is any thing you don't want to talk about, you don't have to. Also, no one at your school other than the students present today will know how you what you have said in this discussion.

I would like to record the discussion on this digital recorder. I'll be taking some notes, but the recording will help me make sure I heard exactly what you said, because your comments are important to me and to knowing how Read Right is working in this school. Is it o.k. for me to record this?

I do have some ground rules, though.

1) **Listen to others.** Don't interrupt**.** Try not to talk at the same time someone else is talking. When you do this it makes it hard to take notes. If this happens, I may ask you to hold your thoughts until the first person is through talking.
2) **Be respectful.** I want to hear everyone's honest opinions. So, it is very important that you are respectful of one another. This means, for example, that you listen to others, that you do not tease, and that you speak in an everyday pleasant tone of voice. If you disagree with someone, do not say, "You are wrong," or "That's a stupid idea." Instead, you can say, "I respectfully disagree."
3) **What you say here, stays here.** This discussion will probably not generate hot, new gossip that you want to tell all your friends. But, I want everyone to feel comfortable giving their true opinions. So, I ask that you not talk about this discussion after it is done.

Do you think you can follow these ground rules? O.K. let's begin.

1. How long have you each been in Read Right?

2. What do you think the main goals of Read Right are?

3. Think about the things you read in the last week. Why do you read?

4. Does Read Right usually help students improve their reading?

    a. If yes, why do you think it helps?

    b. If no, why don't you think it helps?

APPENDIX E

Observations

CLASSROOM OBSERVATION FORM
Coached Reading and Excellent Reading

This observation is designed to follow one selected student for the entire period.

Date of observation: ___________________________
School: _______________________________________
Observer: _________________________________
Length of observation: _________________________
Observation start time: ______________________
Observation end time: _______________________
Name of lead teacher:______________________________________
Number of tutors in room _____________
Number of students in the class at beginning of the observation ___________
Number of students per table

Table 1 ______
Table 2 ______
Table 3 ______
Table 4 ______
Table 5 ______
Table 6 ______

After recording the above information, start with the table furthest from the classroom door and observe for 40 minutes. For the next period, move over one table to the left, and continue this pattern for subsequent observations, unless there is any objection from a tutor or student. At the table, observe the student immediately to the right of the tutor.

Number of students at table you are observing:
Tutor is: M F
Observed Student is: M F
Observed Student is: special education non don't know
Observed Student's color level: Red Green Blue Lime Purple Yellow
Observed Student's race, if known:
Any other info about student:

For the rest of the period, keep track of the activities that happen with the student. Types of activities:

1. Preparation/paperwork/getting ready
2. Independent reading
3. Coached reading
4. Excellent reading
5. Waiting for tutor to get materials
6. Student off-task >2 minutes
7. Other (define on back of page)

Time X:XX	Activity	For Activity 3 and 4 only, make hash marks to indicate the following:																Anytime	
	1-5	Excellent									Coaching								
		Judge					Vocabulary			Cycling	Skip	Doesn't work	Read again only	Vocabulary			Incorrect correction	Free comment	Disengage
		student		tutor			Vocab clarified	Clarification in context	Missed opp to clarify					Vocab clarified	Clarification in context	Missed opp to clarify			
		y	n	y	n	x													

Add comments at bottom or back of page for reasons for disagreement with tutor on judgment or corrections.

After your observation:

1. Record the amount of time spent on each of the following:

	Minutes
Length of observation	
Time on paperwork/preparation (1)	
Time for Independent reading (2)	
Time on Coached Reading (3)	
Time on Excellent Reading (4)	
Time waiting for tutor (5)	
Time off task (6)	
Time for other (7)	

2. During Excellent Reading

	Number of occurrences
Times Excellent Reading was judged	
Tutor said reading was excellent	
Student said reading was excellent	
Student did not judge excellence	
Observer disagreed with tutor (a)	
Vocabulary clarified	
Vocabulary clarified in context of this text	
Opportunity to clarify vocabulary missed	
Student cycled (count each block of cycling)	
Student total repetitions across all cycling (b)	

(a). Explain disagreement with tutor judgment.

(b). Explain any impression of over or under cycling.

3. During Coached Reading

	Number of occurrences
"Skip" corrections	
"Doesn't work" corrections	
"Read it again" (only) corrections	
Total corrections by tutor (add first three lines above)	
Inaccurate corrections by tutor (a)	
Vocabulary clarified	
Vocabulary clarified in context of this text	
Opportunity to clarify vocabulary missed	
Student was off-task	

(a) Explain inaccurate corrections.

4. Anytime

	Number of occurrences
Free comments	
Disengage	

5. Describe any issues with space, materials, noise level or other issues.

6. Other comments about this observation.

CLASSROOM OBSERVATION FORM
Critical Thinking

This observation is designed to follow one table (usually four of five students and a tutor) for the entire period.

Date of observation: ________________ School: _______________________________
Observer: _______________________________
Scheduled length of class: __________________
Length of observation: ______________________
Observation start time: ______________________
Observation end time: ______________________

Name of teacher:____
Number of tutors in room: ____________
Number of students in the class at beginning of the observation: ___________
Number of students per table

Table 1 ______
Table 2 ______
Table 3 ______
Table 4 ______
Table 5 ______
Table 6 ______

After recording the above information, select the table furthest from the classroom door and observe there. For the following period, move to the next table to the left, and continue this way for the rest of the observations. It doesn't matter if you observe the same tutor more than once.

Number of students at table you are observing:
Tutor is: ______M ______F
Students are: ______M ______F
Student are: ______special education ______non ______don't know
Group's color level: Red Green Blue Lime Purple Yellow
Students' races, if known:

IMPORTANT: Ask for a copy of the book the students are reading from.

For the rest of the period, keep track of the activities that happen with the group. Types of activities:

1. Preparation/paperwork/getting ready
2. Work independently on critical reading / read independently
3. Working with tutor and group
4. Other (define at bottom of page if used)

Time X:XX	Activity 1-4	For Activity 3 only indicate the following:									Anytime		
		Item # (type)	SS Agree	SS support opinions	SS switch answer	Wrong answer from S group	Tutor Clarifies Vocab	Vocab clarified in context	Missed opp to clarify	Tutor gives answer	Free Comment by tutor	Disengage	Off task >2 minutes

S discussion of disagreement, third instance:

After your observation:

1. Record the amount of time spent on each of the following.

	Minutes
Length of observation	
Time on paperwork/preparation	
Time on critical and independent reading	
Time working with tutor and group	
Time on "other"	

2. During Critical Thinking

	Number of occurrences/items
Total items discussed	
Items students agreed on w/out needing to discuss	
Students supported their answers (Count each Ss' response as 1)	
Students switched their answers (Count number of Ss)	
Student consensus on answer incorrect	
Vocabulary clarified	
Vocabulary clarified in context of this text	
Opportunity to clarify vocabulary missed	
Student asked to disengage	
Student off task	
Free comments	

3. Third example student discussion of disagreement:

4. Note any problems with: physical space, noise level, materials, or other

5. Other comments about this observation.

APPENDIX F

Gates-MacGinitie Results

Main effects. The main regression analysis showed a significant positive effect of Read Right on middle and high school students' reading comprehension as measured by the Gates-MacGinitie Reading Comprehension Test. As shown in Table F-1, the estimated mean for students in the treatment group was 5.49 scale score points higher than for students in the control groups, and this difference was statistically significant, even after accounting for students' pretest performance, which also significantly predicted posttest scores.

Table F-1
Summary of Regression Analysis for Variables Predicting Posttest Gates-MacGinitie Reading Comprehension Extended Scale Scores

Variable	*B*	SE	*β*	*t*	*p*
Constant	498.86	2.22	--	224.68	.000
Treatment	5.49	1.89	.11	2.90	.004
Pretest	0.60	0.04	.59	15.38	.000
School 1	6.50	2.87	.11	2.27	.024
School 2	3.93	2.68	.07	1.47	.143
School 3	-4.48	2.70	-.08	-1.66	.097

School Effects. Descriptive statistics for schools showed that in three of the four schools, students in the treatment group outperformed those in the control group. However, in one school students in the control group did better than those in the treatment group, although this result did not reach significance. We used linear regressions for each school to explore the effects of schools. Table F-2 shows the results of these analyses.

Table F-2
Summary of Regression Analyses Exploring the Effects of Schools on Predicting Posttest Gates-MacGinitie Reading Comprehension Extended Scale Scores

Regression	Variable	*B*	SE	*β*	*t*	*p*
School 1	Constant	504.27	2.58	--	195.59	.000
	Treatment	9.66	3.71	.22	2.61	.011
	Pretest	.46	.07	.56	6.81	.000
Schoo1 2	Constant	499.46	2.17	--	230.44	.000
	Treatment	12.17	3.03	.26	4.02	.000
	Pretest	.68	.06	.70	10.91	.000
Schoo1 3	Constant	494.65	2.87	--	172.52	.000
	Treatment	4.90	3.93	.10	1.25	.214
	Pretest	.58	.11	.46	5.56	.000
Schoo1 4	Constant	504.23	3.09	--	163.33	.000
	Treatment	-5.10	4.37	.09	-1.17	.246
	Pretest	.66	.08	.65	8.17	.000

Effects by student subgroups. We used five different linear regressions to determine whether Read Right had different effects for different student groups: African Americans, Latinos, whites, ELLs, and special education students. Table F-3 shows the results of these five regressions in detail.

Table F-3
Summary of Regression Analyses Exploring the Effects of Student Groups on Posttest Gates-MacGinitie Reading Comprehension Extended Scale Scores

Regression	Variable	*B*	SE	*B*	*t*	*p*
African American	Constant	496.84	4.30		115.51	.000
	Treatment	7.57	2.78	.17	2.72	.007
	Pretest	.58	.06	.61	9.72	.000
	School 1	6.46	4.73	.14	1.36	.175
	School 2	4.04	4.50	.09	.90	.370
	School 3	-4.27	8.73	-.03	-.49	.625
Latino	Constant	502.45	3.09		162.69	.000
	Treatment	.68	3.13	.01	.22	.828
	Pretest	.62	.07	.56	9.03	.000
	School 1	10.98	5.48	.13	2.00	.047
	School 2	-.64	9.63	.00	-.07	.947
	School 3	-5.26	3.38	-.10	-1.56	.122
White	Constant	493.78	7.23		68.32	.000
	Treatment	8.06	4.68	.14	1.72	.089
	Pretest	.72	.11	.63	6.72	.000
	School 1	5.81	8.05	.09	.72	.472
	School 2	5.28	8.00	.09	.66	.511
	School 3	-3.12	8.55	-.05	-.36	.717
ELL	Constant	494.69	5.26		93.98	.000
	Treatment	-.41	5.33	-.01	-.08	.939
	Pretest	.63	.18	.39	3.44	.001
	School 1	.23	10.93	.00	.02	.983
	School 2	-25.23	22.80	-.13	-1.11	.273
	School 3	2.32	5.56	.05	.42	.678
Special Education	Constant	494.76	5.40		91.67	.000
	Treatment	1.99	4.07	.04	.49	.625
	Pretest	.52	.08	.55	6.98	.000
	School 1	14.64	6.55	.23	2.23	.028
	School 2	3.72	6.03	.06	.62	.538
	School 3	-1.47	6.00	-.03	-.24	.807

Effect of Total Tutoring Hours. Students' total number of reported tutoring hours significantly predicted their Gates-MacGinitie Reading Comprehension posttest scores. Students who received more hours of tutoring did better than those who were tutored for fewer hours.

Table F-4
Summary of Regression Analysis for Total Tutoring Hours and Posttest Gates-MacGinitie Reading Comprehension Extended Scale Scores of Treatment Students

Variable	*B*	SE	*β*	*t*	*p*
Constant	493.74	4.60	--	107.41	.000
Total Tutoring Hours	.62	.24	.14	2.60	.010
Pretest	.64	.05	.63	12.11	.000

Research on the Use of Khan Academy in Schools

SRI Education

March 2014

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Research on the Use of Khan Academy in Schools

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Executive Summary

Background

What started in 2006 as a set of videos on various math topics that Sal Khan posted on YouTube to help tutor his school-aged cousins across the country, has evolved into the Khan Academy online learning system with more than 10 million unique users per month. Since Khan Academy's appearance on the Web, users have viewed more than 365 million videos and solved over 1.8 billion math problems.

The sheer volume of Internet traffic that Khan Academy is generating is evidence of the worldwide hunger for quality online instruction in primary and secondary mathematics, and the value that Khan Academy users perceive in its offering of video-based lectures with opportunities for student practice and reports of student progress. It is also emblematic of the recent proliferation of open educational resources and subscription-based online math products targeting the K–12 learning community. Teachers around the globe now have access to more online resources like Khan Academy than ever before, and we can be confident that more products are in the pipeline as the entry cost to production declines and the public's access to devices with high-speed bandwidth increases. Educational leaders and teachers are hungry for information on the relative benefits of these products for different types of students, on the factors that support more effective use in schools, and the costs associated with their use relative to other alternatives.

In 2010 Khan Academy received major funding from the Bill & Melinda Gates Foundation and Google to build out its organization and create additional content. Subsequently, Khan Academy began working with a local school district on implementing Khan Academy in a few classrooms. In September 2011 the Bill & Melinda Gates Foundation contracted with SRI International to study the implementation of Khan Academy in a more diverse set of schools and classrooms during school year (SY) 2011–12 and SY 2012-13. The goal of this research was to generate information for school systems, school leaders, and teachers on how Khan Academy, and by implication other similar digital learning tools and resources, could be used to support personalized math learning (i.e., learning that tailors what is taught, when it is taught, and how it is taught to the needs of students working individually and with others). Such guidance is sorely needed at a time when school administrators and teachers are rapidly incorporating digital learning into classroom instruction, but often lack the experience needed to foresee all of the challenges and opportunities entailed in implementing technology for personalized learning.

This implementation report provides formative information and findings that are relevant to educational leaders, teachers, developers, and researchers interested in the ways that Khan Academy and other similar digital instructional resources may be used in formal school settings and the features that may support improved teaching and learning.

Early Stage Classroom Adoption and the Ongoing Development of Khan Academy

Because of the early-stage, emergent nature of both Khan Academy as a school resource and of schools' personalized learning implementation practices, SRI conducted an implementation study rather than an evaluation of Khan Academy's impact. Providing definitive evidence of the effectiveness of Khan Academy use in classrooms is not yet possible. No clearly specified, broadly implemented protocol exists for Khan Academy use in schools; teachers are actively experimenting with different ways to use Khan Academy resources in their classrooms. For example, during our research, teachers used Khan Academy as an intervention for students who had fallen behind their grade-level peers; as an enrichment activity for advanced students, allowing them to explore topics above their grade level; as an accountability tool allowing close monitoring of student progress on problem sets; and as a highly integrated supplemental practice activity, reinforcing skills recently introduced in the classroom. Moreover, during the 2 years of the study, teachers in some schools significantly altered their use of Khan Academy as they came to learn more about it.

Khan Academy itself also continues to evolve as it adds to its existing content offerings and features to support classroom use. During the study, Khan Academy staff worked closely with school administrators, teachers, and students, as well as the SRI research team, to understand how Khan Academy was being used to support teaching and learning, and gather suggestions for ways to improve the website for use in schools. As a digital resource for supporting math instruction and learning in schools, the current version of Khan Academy differs significantly from the website available to teachers in fall 2011. The content—videos and problem sets—has been expanded to fill in gaps and to ensure coverage of the grade level Common Core mathematics standards (this ongoing effort is expected to provide full coverage of the K-12 Common Core State Standards by fall 2014). System reports have been refined to allow teachers and students to more effectively monitor student progress toward selected goals. The content has been reorganized due to the process of mapping lessons to grade-level Common Core standards. Search features have also been added to facilitate teachers' identification of videos and problem sets appropriate for their grade level, and to help keep students focused on relevant topics.

The Research Sample

With the support of the Bill & Melinda Gates Foundation, Khan Academy recruited a variety of California schools to participate in a two-year pilot starting in fall 2011. The schools represented a range of public, independent, and charter schools. In collaboration with Khan Academy, SRI selected 9 of the pilot sites for its implementation research, with the goal of representing differing ways that Khan Academy could be used to support math instruction for a range of student types. Research sites were also selected to represent a range of governance structures—public school districts, charter management organizations (CMOs), and independent schools—as well as school levels—elementary, middle, and high schools. A majority of the schools served students from low-income communities, and several elected to use Khan Academy to support math instruction for their students with the greatest needs. (Appendix B provides a profile for each of the research sites, including details about their goals and implementation model for Khan Academy use.)

All study participants were volunteers, who could drop out of the study at any time and for any reason. Study sites were also given full discretion over how and how often they used Khan Academy in their math instruction; at some sites, individual teachers decided how Khan Academy was used. As a result, the number of years of participation in the implementation research varied by site. Four of the sites were included in the research for both years of the study; the other sites participated for just one year. One public school district was by far the largest of the sites participating in the pilot, with 8 schools and more than 50 teachers participating across the 2 years of the study.

The Data Collection

Findings presented in this report are based on data collected from the participating schools during SY 2011–12 and SY 2012-13. To collect information about how Khan Academy was being used and its potential benefits, SRI researchers visited schools, districts, and CMOs; made classroom observations; interviewed organization and school leaders as well as teachers, parents, and students; conducted teacher and student surveys; and analyzed students' user log files over the school year. When appropriate, we present findings from our analysis of student outcomes—scores on standardized achievement tests and attitudes toward and interests in math, from sites where they were available—and examine the association between levels of Khan Academy use and these outcomes.

Use of Khan Academy in Schools

Research sites varied considerably in how they used Khan Academy during the 2 school years, but all sites used it to support a blended learning model; that is, in conjunction with teacher-led direct instruction.[1] In theory, Khan Academy could be used as the core or only curriculum resource for math instruction, with each student working independently. However, with the exception of one site in SY 2012-13, schools and classrooms in the implementation research study did not choose that approach. Instead, Khan Academy was used primarily as a supplemental resource to support teacher-led instruction. Typically, teachers assigned Khan Academy problem sets to give their students practice and immediate feedback on recently learned skills or to fill knowledge gaps. Even though Khan Academy is primarily known for its video library and has been associated with the "flipped"

[1] For classifications of common blended learning models see the 2013 Christensen Institute report, *Is K–12 Blended Learning Disruptive?* (http://www.christenseninstitute.org/publications/hybrids/)

classroom model (i.e., teachers assign videos on new concepts for students to watch for homework and use class time to extend the video lectures with discussion and interactive activities), teachers participating in the research were more focused on exploring how online, personalized practice opportunities for students could be incorporated into their existing instructional activities. In most cases, when students used the videos, they did so in class to review concepts as they worked through the Khan Academy problem sets. Few teachers used the videos in their lessons to introduce new concepts and skills.

Although most of the variation in Khan Academy use occurred among different sites and schools, we also observed significant variation within schools and even for individual teachers over time, both within a school year and across school years. Use varied as pilot schools and teachers learned what Khan Academy had to offer and how best to use it to support the kind of teaching and learning they wanted for their students.

Influence of Formal Learning Environments

In the formal learning environment of schools, the curriculum is governed by grade-level content standards and pacing guides aligned with state testing schedules, and teachers are expected to be the primary source of math instruction. Khan Academy was not initially designed with this type of learning environment in mind, but it has since been built out and continues to evolve, adding features that facilitate classroom use. It should be remembered, however, that the overwhelming majority of Khan Academy's millions of users around the globe are self-initiated learners, both children and adults, who are using Khan Academy outside schools for a variety of purposes; these users rely on Khan Academy, particularly the video tutorials, as a key source of instruction. The number of Khan Academy users within formal school settings, although growing, represents only a very small fraction of the overall user base. Thus, because our report focuses on the impact of Khan Academy on schools as part of their formal instruction, it does not represent the activities of the broader, informal user population.

A set of factors operating on and within public school systems constrains how the average teacher is likely to use instructional resources like Khan Academy—resources that were designed to support self-directed and self-paced learning. In the public and charter schools participating in the study, curriculum and instruction are shaped largely by grade-level state content standards, state accountability systems, and an age-based student promotion policy. Whereas teachers may be willing and encouraged by school leaders to experiment with self-paced instruction and different resources to supplement their classroom instruction, in this environment most feel compelled to follow pacing guides and deliver the core math instruction themselves to make certain all their students are exposed to (and, they hope, master) the grade-level content standards that will be covered on end-of-the-year tests. Our research found that teacher-led instruction was dominant for the introduction of new math concepts in all but one school site; Khan Academy was used primarily by students to supplement the core instruction, and as a source of focused opportunities to practice newly-learned skills.

Another factor shaping how Khan Academy was used in the pilot schools was classroom technology access, particularly in SY 2011-12. Of the 94% of teachers in the sample whose students used Khan Academy primarily in the classroom during that school year, only one-third indicated that their classrooms had a computer for every student to support one-to-one computing anytime. More typically, because teachers during this school year shared laptop carts with other teachers, computers were generally available no more than 2 to 3 days per week—a clear constraint on how Khan Academy could be used in those classrooms. By SY 2012-13, more than 80% of the participating teachers, including teachers in the largest site (Site 1), had access to anytime, one-to-one computing in their classrooms.

Summary of Research Findings

Key findings of the implementation research are summarized as follows.

Khan Academy, an Evolving Instructional Resource

- **Khan Academy is continuing to fill in gaps and create new content aligned with standards at each grade level.** From a formal school curriculum perspective, during the course of the study, content gaps existed in both the videos and the problem sets, particularly in SY 2011-12. Over the research period, Khan Academy developed considerable new content to fill the gaps and continues to do so. Our interviews revealed that teachers of younger students in the pilot (fifth- and sixth-graders) often found Khan Academy problem sets too difficult for them. In several instances, Khan Academy responded by developing problem sets that were developmentally appropriate for these younger students. In addition, significant gaps existed in the content for ninth and higher grades, particularly in geometry. Khan Academy has been undertaking a major content development initiative of both videos and problem sets to ensure comprehensive coverage of Common Core State Standards for K-12 math.

- **Khan Academy has invested significant resources to help teachers integrate their content with classroom instruction and to improve the website's resources through direct, and sometimes rapid, response to teacher and student feedback.** These changes were stimulated by Khan Academy staff's own observations in the field, analysis of user data, and feedback from the schools and the SRI research team. Some of the significant changes made to the website since fall 2011 follow.

  - **Mapped content to Common Core State Standards and provided search capabilities by standard and grade level.** By the second half of SY 2011-12, a teacher was able to identify all available content (videos and problem sets) associated with a particular standard and grade level. Before that time, it had been fairly burdensome for teachers to identify the appropriate Khan Academy content to support a particular unit of instruction.

  - **Developed "tutorials" for instructional units on important topics supported by a sequence of Khan Academy videos and problem sets.** By the end of SY 2011-12, Khan Academy initiated an effort to organize its videos and problem sets into tutorials. Tutorials (like playlists) are intended to contain a sequence of videos and problem sets that teachers can use or modify to support an instructional unit on an important topic, such as understanding ratios and proportions.

  - **Created the capability for teachers to recommend content for students to view and work on that directly supports classroom instruction.** During the study, many teachers expressed a desire to be able to assign or recommend problem sets for students to complete that covered the same topics they were covering in their lessons. Although some teachers allowed students to select their own topics on Khan Academy and move at their own pace, most teachers preferred to use Khan Academy resources to help students practice skills they had recently covered in class.

  - **Upgraded teacher reports with simplified, customizable summaries of student data at the class and individual student levels.** Teachers can now filter class- and student-level data by the specific problem sets they have assigned as well as by time period.

- **Added a goal-setting feature that allows students to add specific videos and problem sets to view and complete as a daily, weekly, or longer-term goal.** The active goals appear on the top of every Khan Academy page next to the student's name so that students are aware of the goals they've set. Teachers can use the reporting feature to track each student's progress against the goals students have set.

- **Updated teacher and coach resources with information, tips, and guides on how to implement Khan Academy in the classroom.** The information is organized into video-based tutorials to help teachers make better use of the website. The resources also include a set of downloadable curriculum plans developed by other teachers using Khan Academy at different grade levels.

Trends and Diversity in Khan Academy Use Models

- **Use of Khan Academy during the first year of the pilot evolved significantly over the school year.** Throughout the year in almost all the sites, classroom use of Khan Academy changed as a result of many factors, including guidance from Khan Academy staff, teachers' insertion of their own instructional goals and preferences, and changes in access to technology. At some of the sites, during the first 6 to 8 weeks of the school year Khan Academy was used to support a primarily exploratory, self-paced, self-directed instructional model disconnected from the curriculum. In many of the sites, as the school year progressed, Khan Academy came to be used with classroom pacing and tighter links to the core curriculum sequence and the content of the teachers' daily lesson presentations. Changes in website features and tools, such as goal setting and making content searchable by Common Core State Standard and grade level, supported teachers in these new approaches. At the outset of SY 2012-13, Khan Academy use tended to be more integrated with classroom instruction than in the prior school year.

- **In most but not all sites, teachers used Khan Academy primarily to supplement their own core instruction.** Most teachers used Khan Academy to provide extended practice following their introduction of new concepts and skills. The primary Khan Academy resource used was the problem sets, with videos used at the discretion of students. Few teachers assigned students to watch videos, either inside or outside of school for homework, as a way of introducing a new concept or as a teaching aid.

Overall, the teachers in SRI's survey reported that Khan Academy played the greatest role in supporting their instruction by providing students with practice opportunities (82%) and allowing them to provide small-group instruction to some students while others used the program (67%). Fewer teachers (20%) indicated that Khan Academy played a role in introducing new concepts within a lesson.

- **The time students spent working on Khan Academy varied considerably across and within sites and by school year.** Use of Khan Academy—viewing of videos and working on problems—ranged from a low of 396 minutes (or 11 minutes per week assuming a 36-week school year) for the median student in Site 1, a public school district in SY 2012-13, to a high of 3,140 minutes of use (or 90 minutes per week) in SY 2011-12 at Site 2. With the exception of Site 2 where Khan Academy use in the first year of the pilot consumed 22% of the time allocated for math instruction, Khan Academy use represented less than 10% of scheduled math instructional time at the pilot sites. Of the time students did spend on Khan Academy, more than 85% was allocated to working on the problem sets.

The high use of Khan Academy in Site 2 in SY 2011-12 relative to the other sites and study years was supported by several factors: (1) anytime access to one-to-one computing in classrooms; (2) mandated completion of Khan Academy goals with consequences for failure to do so; (3) close teacher monitoring of progress toward goals; (4) a well-planned integration with the core curriculum; and (5) extended instructional blocks (90 minutes dedicated to daily math instruction).

- **Few teachers expected their students to use Khan Academy outside the regular school day.** Students' use of Khan Academy happened during the regular school day, 8 a.m to 3 p.m. For the median student, use outside of school ranged from a low of a few minutes a week across several schools in the sample to a high of 25 minutes per week in Site 8. Across the 2 years of the study, about one in five teachers participating in the study reported that they assigned Khan Academy work to be completed outside the regular school day on a weekly basis, whereas 45% of teachers never assigned it for homework at all. However, in three of the pilot sites with schools in low-income communities, Site 2 (in SY 2011-12), Site 3 and Site 8, expectations differed. In those schools, students were expected to do whatever it took to complete any Khan Academy work they did not finish in class, including staying after school to use the school computers or using computers in public libraries.

About 50% of teacher survey respondents across the two study years reported they never assigned Khan Academy videos or problem sets for homework given concerns about students' lack of access to computers or reliable Internet connections at home. Student self-reports of home access to computers and the Internet in SY 2012-13 showed that the proportion lacking access to a computer or reliable Internet connectivity varied by school, ranging from 7% in Site 8 to 33% in Site 4.

- **Teachers' who reviewed the Khan Academy reports regularly found them useful.** Across the 2 years of the study, slightly more than half the teachers reported reviewing the Khan Academy student performance data at least once a week, with about four in ten teachers reporting they reviewed a report once a month or less or never at all.

Teachers who did use the Khan Academy reports regularly (once a week or more often) reported that they primarily did so to monitor the understanding of different concepts by the whole class and by individual students, and to identify students who required tutorials or small group instruction. In addition, almost eight in ten regular users of the reports indicated that they used them to identify gaps in student learning and to modify their instruction on the basis of student needs.

Among the teachers who reviewed the data reports at least a few times a month, slightly more than half characterized the data as very useful in informing their instruction, with the other teachers finding the student reports somewhat useful. Khan Academy conducted surveys, focus groups, and one-on-one discussions with teachers to understand how teachers thought reports could be made more useful, and made several changes to reports on the basis of that feedback; those changes included enabling teachers to filter reports by topic and skill to enable easier identification of students' progress relative to the curriculum.

Factors Influencing the Use of Khan Academy in Schools

- **Khan Academy is a free resource for districts and schools—an important factor in leaders' decisions to pilot this resource.** Although many aspects of Khan Academy appealed to district, CMO, and school leaders, economy was a significant driver. Given restricted education budgets, education leaders were seeking cost-effective online instructional resources like Khan Academy to implement their instructional visions.

- **One-to-one access to computers in the classroom and extended time allotted for math instruction were two key facilitators of Khan Academy use.** Few classrooms in our study in the first research year (SY 2011-12) had access to one-to-one computing every school day. Teachers in those schools that did have access to anytime one-to-one computing in the classroom were able to have their students use Khan Academy much more extensively and use it more flexibly to support their instruction than those in schools with high student-to-computer ratios.

  In addition, teachers with extra or extended time dedicated to math instruction (more than 50 minutes per day) had more opportunities to integrate Khan Academy into their core instructional time than did other teachers. Five of the nine research sites dedicated 80 minutes or more to daily math instruction.

- **Lack of alignment of Khan Academy content with core curriculum posed a significant challenge for integrating this learning system into the classroom.** Two-thirds of teachers surveyed across study years reported that a lack of alignment between the Khan Academy resources and their school's curriculum had a moderate to significant negative effect on their ability to use Khan Academy effectively with their students. As reported above, some content gaps existed in both the videos and the problem sets relative to grade-level standards during the first year of the study and to a lesser extent during the second year as well. During these 2 years, Khan Academy developed considerable new content to fill the gaps and plans to have full coverage of the K-12 Common Core standards by fall 2014.

Benefits of Khan Academy Use for Teaching and Learning

- **Students' engagement was high during Khan Academy sessions.** Across elementary, middle, and high school levels, a high intensity of engagement was evident during most of our classroom observations. Students in the lower grades in particular reported that they enjoyed their "Khan time," and the teachers we interviewed confirmed this. Overall, 71% of students surveyed reported that they enjoyed using Khan Academy.

  Our observations and student and teacher interviews provide plausible, but as yet untested, explanations for this high level of engagement, including:

  - Students enjoyed interacting with the hardware (e.g., laptops, notebooks, iPads).
  - Some students were motivated by Khan Academy's game-like features—the badges and energy points awarded when they successfully completed problem sets.
  - Immediate feedback, hints, and access to videos meant that students using Khan Academy were not stuck for long and could experience success even when the content became challenging.
  - Khan Academy instilled in students a sense of ownership and control over their learning that is rare in traditional classroom settings.

- **Teachers reported that integrating Khan Academy into their instruction has increased their capacity to support their students in a number of areas.** Across the two years of the study, the majority (91%) of teachers indicated that using Khan Academy increased their ability to provide students with opportunities to practice new concepts and skills they had recently learned in class. Eight in ten teachers also reported that Khan Academy increased their ability to monitor students' knowledge and ability, thus helping to identify students who were struggling. Among teacher survey respondents, 82% reported that Khan Academy helped them identify students who were ahead of the rest of the class, 82% said it helped them expose advanced students to concepts beyond their grade level, and 65%, including 72% of teachers in schools serving low-income communities, said that Khan Academy increased their ability to help struggling students catch up. Slightly more than half the teachers (56%) reported that using Khan Academy helped them determine what content they needed to reteach or could skip, and 32% of teachers overall and 48% of teachers in schools serving low-income communities reported that Khan Academy helped them move more quickly through the curriculum.

- **A majority of teachers were happy with their Khan Academy experience and plan to use Khan Academy with their students in the upcoming school year.** Of teachers who used Khan Academy, 86% reported they would recommend it to other teachers, and 89% planned to use Khan Academy with their students during the next school year.

Links Between Khan Academy Use and Student Outcomes

- **In a set of exploratory analyses, positive relationships were found between Khan Academy use and better-than-expected achievement and nonachievement outcomes, including level of math anxiety and confidence in one's ability to do math.** In exploratory analyses we examined how the time spent on Khan Academy and the number of problem sets completed to proficiency were associated with better than predicted spring test scores and attitudinal measures. We conducted the analyses using student-level data from Site 1 and Site 9. We found a positive and statistically significant relationship between use of Khan Academy (the minutes spent working with the Khan Academy resources and the number of problem sets successfully completed to proficiency)—and improved student outcomes—better than predicted test scores, lower math anxiety and higher confidence in one's ability to do math. For example, among fifth- and sixth-grade students in Site 1, those with better than predicted California Standards Test (CST) scores had spent, on average, 12 hours more on Khan Academy in grade 5 and 3 hours more in grade 6 than their peers with lower CST scores than would have been predicted based on their prior math achievement. The students with higher than predicted CST scores also completed 26 additional Khan Academy problem sets in grade 5 (approximately 39% more) and 20 additional problem sets in grade 6 (approximately 22% more) compared to peers with lower than expected achievement gains. The pattern of relationship between Khan Academy use and spring test scores was similar for Site 9, but was only statistically significant for some grade levels.

We also found a positive relationship between the number of Khan Academy problem sets completed and a set of nonachievement, attitudinal outcomes. These analyses were performed using student data from fifth- and sixth-grade classrooms in Site 1 during SY 2012-13, the only year these attitudinal measures were collected. Students who successfully completed between 10% and 20% more problems sets than did other students reported lower than expected anxiety about doing math in the spring based on their reports in the fall, and higher than expected beliefs about their own math ability (math self-concept), and confidence in their ability to learn math even when concepts become difficult (academic efficacy). The same positive associations held for time spent working on Khan Academy but the relationship was statistically significant only for math self-concept and academic efficacy. Similarly, students in Site 1 who spent between an average of one and a half to three hours more on Khan Academy across SY 2012-13 had higher than expected self-reports of their math self-concept and academic efficacy.

These analyses are exploratory, and the results are preliminary; they cannot be used to make definitive claims about the effectiveness of Khan Academy resources. Other plausible explanations could account for these associations that the analyses did not consider. Although the results are not definitive, they do suggest associations that are worthy of future investigation using more rigorous designs (e.g., random assignment experiments) to better understand the potential efficacy of the use of Khan Academy in the classroom.

- **Teachers who used Khan Academy with their students believed it had a positive impact on student learning.** In responding to SRI's teacher survey, over the 2 years of the study, roughly 85% of teachers reported that they believed Khan Academy had made a positive impact (somewhat or strong) on students' learning and understanding of the material overall, with 42% reporting a strong impact. Of the 87% of teachers who believed Khan Academy had a positive impact on students' ability to work and learn independently, 38% reported a strong impact. In terms of specific skills or areas, more than eight in ten of the surveyed teachers (83%) felt that Khan Academy had a positive impact (somewhat or strong) on students' acquisition of procedural skills (with 50% reporting a strong impact). A strong majority of teachers (80%) also believed Khan Academy had a positive impact on students' conceptual math understanding (while 24% described it as a strong impact). Teachers credited Khan Academy with enabling students to learn new math concepts beyond their grade level (91% overall, with 41% reporting a strong impact). Two-thirds of the surveyed teachers believed that Khan Academy had a positive impact on their students' problem-solving skills and ability to apply mathematics in context, with one in ten reporting a strong impact in these two areas.

- **When teachers were asked in the survey about the relative benefits of Khan Academy for students with different levels of prior academic performance, teachers' perceptions of Khan Academy's effectiveness varied.** Across the two years of the study, most of teachers described Khan Academy as at least somewhat effective for students regardless of math ability level. However, teachers described Khan Academy as most effective in meeting the learning needs of students whose academic work was ahead of that of most students their age, with 74% of teachers indicating the program was very effective for this group. Khan Academy was considered very effective in meeting the learning needs of students whose academic work was at the expected level for their age by 43% of teachers. Just 25% of teachers reported that Khan Academy was very effective for meeting the learning needs of students whose academic work was behind most students their age; an additional 47% reported it as somewhat effective for these students. These trends were consistent across study year.

- **Some students indicated positive changes in their feelings toward math since they had started using Khan Academy.** Across the 2 years of the study, 32% of students agreed they liked math more since they started using Khan Academy. Additionally, 45% of students indicated they were able to learn new things about math on their own, without the help of their teacher.

Implications of the Implementation Research

On the basis of the research conducted across SY 2011–12 and SY 2012-13, it is premature to judge the effectiveness of Khan Academy as a school-based instructional resource or intervention. Khan Academy use varied significantly within and across sites during the school year. Use models changed over time, and different sites had different goals and expectations for teachers' use of Khan Academy to support their math instruction. Several sites specifically used Khan Academy to support struggling math learners. Other sites used Khan Academy purely to supplement the core instruction and allowed students to self-direct their use of it. Yet other sites tightly linked students' Khan Academy use to the weekly or upcoming lessons.

To understand the potential efficacy of Khan Academy, we must first understand the local context of its use (including access to technology, organization of instructional time, and curricular constraints), the role Khan Academy plays in math instruction, and the school's and teacher's goals for its use. We also must acknowledge that, for all the schools participating in the pilot, this was their first attempt to integrate a digital resource designed for personalized learning into their instructional system.

No single model of Khan Academy use was implemented across sites. Teachers at most sites were given total discretion over how to implement it in their classrooms. Because Khan Academy was not a stand-alone curriculum, course, or self-contained program of study over the duration of our analysis, all teachers spent time exploring how best to use the resources to support their instruction; integrate Khan Academy time into the instructional day; and determine how different types of students responded to the demands of self-directed learning and the supports students needed to succeed. Some teachers addressed these issues in more depth and perhaps more successfully than did others. As a group, however, almost all the teachers were satisfied with their first experience with Khan Academy and planned to use it in the future.

As more and more schools and teachers experiment with different ways to use Khan Academy resources to support instruction, and as Khan Academy evolves to better support classroom instruction and student learning, still more models are likely to emerge. To measure the impact that Khan Academy can have on schools' ability to improve all students' math learning, each well-specified implementation model should be studied at scale using a rigorous evaluation design.

Preliminary findings reported here suggest that it would be worthwhile also to conduct research on Khan Academy's impact on nonachievement outcomes. In addition to examining effects on attitudes toward mathematics and oneself as a math learner, the extent to which students' interactions with a self-directed learning environment like Khan Academy foster key 21st century learning skills is worthy of study. Future research should include measures of student outcomes such as digital literacy, resourceful use of peers and online learning resources, time management, and personal accountability—life skills that are critical for success in higher education and beyond.

Finally, although this implementation study provides a start, there is more to learn about the supports teachers need for successfully integrating instructional resources like Khan Academy into their daily instruction. We have found that teachers want content that is curated, that is searchable by grade level and content standard, and that can be assigned to students to support their classroom lessons. Teachers also need easily accessible and easily interpreted information from the online system to monitor classroom and individual student performance. But particular tools and practices for fulfilling these needs still need to be tested empirically.

Conclusion

Challenges related to specific school environments as well as the fundamental nature of formal education shape how schools use Khan Academy. Challenges include accountability pressures, resistance to changing traditional teacher roles, the structure of the school day, and limited access to technology. At the same time, teachers and school leaders are attracted to Khan Academy because it is available for free, offers a flexible modular set of resources, engages students, provides immediate feedback, maintains detailed records of student progress, and offers opportunities for students to direct their own learning.

The Khan Academy pilot showed that schools serving diverse student populations can make use of Khan Academy as part of their mathematics instruction and that they find value in doing so. It also demonstrated how a technology provider can collaborate with schools and independent researchers to obtain and respond to feedback to execute rapid cycles of improvement of its digital education offerings. The new features and changes to existing ones that Khan Academy implemented to meet the needs of students and teachers in math classrooms resulted both in an improved product and in new understandings of how personalized learning can be integrated into classroom instruction.

Introduction

As teachers, school leaders, and education policymakers seek to transform classroom teaching and learning in ways that make them more personalized, engaging, and effective, many educators are looking to technology as the key to bringing their visions to fruition. It is hardly surprising that the Khan Academy, a set of Internet-based mathematics learning resources and tools that attracts millions of users per month and is available free of charge, would interest schools.

Khan Academy's roots differ markedly from those of the typical technology product for the K-12 education market. The Khan Academy developed out of Sal Khan's efforts to tutor young relatives in aspects of mathematics they found difficult. The short videos he made showing his problem solutions on a blackboard with a voiceover explaining each step appealed to students and others who wanted to brush up on some aspects of mathematics in the privacy of their homes. When individual teachers and schools considered using Khan Academy, it was not at all clear that the content and tools designed for self-initiated, independent learning would be a good match for typical math classes. Khan Academy resources were developed for self-paced use tailored to an individual's constellation of skill proficiencies and weaknesses and without reference to grade-level content standards. Typical classrooms focus on content specified for the class's grade level and use teacher-led, whole-class or "lockstep" pacing. Just how Khan Academy resources could be useful in classrooms—and the changes needed in those resources or in classroom practices when the two were brought together—were unknown when Khan Academy first began working on a trial basis with a local school district in 2010.

At the same time, the Bill & Melinda Gates Foundation was making investments in digital content and tools for personalizing learning and enhancing student outcomes. The foundation wanted to test the idea that digital learning resources like Khan Academy's—that address the needs and gaps of each individual student, provide engaging learning content, and give students and teachers detailed information about learning progress—could improve outcomes for students.

With support from the foundation, in fall 2011 Khan Academy began a two-year formal pilot program in a dozen sites in California school districts, charter schools, and independent schools serving diverse student populations. At the same time, the foundation contracted with the independent research organization SRI International (SRI) to study the implementation of Khan Academy resources and tools in those schools.

The goal of this research was to generate information for school systems, school leaders, and teachers on how Khan Academy, and by implication other similar digital learning tools and resources, could be used to support personalized math learning (i.e., learning that tailors what is taught, when it is taught, and how it is taught to the needs of students working individually and with others). Such guidance is sorely needed at a time when school administrators and teachers are rapidly incorporating digital learning into classroom instruction, but often lack the experience base needed to foresee all of the challenges and opportunities entailed in implementing technology for personalized learning.

This implementation report provides formative information and findings on the use of Khan Academy in nine sites in California during their first or second year of implementation. The report also provides preliminary evidence about the potential link between use of Khan Academy and math achievement and a set of important nonachievement outcomes. SRI prepared this report to inform education leaders, teachers, developers, researchers, and others interested in the ways that Khan Academy, and other similar digital instructional resources, can be used in formal school settings.

The implementation efforts and research described here occurred at a time when the Khan Academy resources and tools were undergoing rapid evolution, in many cases in response to the expressed needs of pilot teachers and students. Khan Academy staff worked closely with school administrators, teachers, and students and with the SRI research team to understand how their content and tools were being used and to determine the enhancements that would make them more useful and easier to implement in classrooms.

The various schools and teachers participating in this pilot work implemented Khan Academy with different goals in mind. Some teachers regarded Khan Academy as an intervention for students who had fallen behind their grade-level peers; others treated it as an enrichment activity for advanced students. Some schools were attracted to features of Khan Academy that supported accountability, allowing teachers to closely monitor student progress on problem sets; others wanted to use it for intensive practice on specific math skills that classroom teachers had recently introduced. Moreover, during the course of the study, some teachers and schools made significant changes in how they used Khan Academy as they learned more about it.

As a digital resource for supporting math instruction and learning in schools, the current version of Khan Academy is significantly different from the resources and tools available to teachers in the fall of 2011. Its content—videos and problem sets—has been expanded to fill in gaps and to ensure coverage of the grade-level Common Core mathematics standards (this is an ongoing effort, with full coverage of the K-12 Common Core standards expected by fall 2014). Progress reports were refined to allow teachers and students to more effectively monitor student progress toward selected goals. And Khan Academy reorganized its content, mapping videos and problem sets to align with grade-level Common Core standards, and added search features to allow teachers to more easily identify content appropriate for their grade level and current instructional focus.

Because of the early-stage, emergent nature of both Khan Academy as a school resource and the schools' personalized learning implementation practices, SRI conducted an implementation study rather than an evaluation of Khan Academy's impact. An experimental test of an intervention's impact (a randomized control trial) would have required a clearly specified treatment, including a protocol for its enactment. Because neither the Khan Academy resources and tools nor the way in which they were used in classrooms was stable across the various study sites and across the 24 months of this work, it was too soon to attempt a rigorous evaluation of the impacts of using Khan Academy. Rather, our implementation study focused on documenting use models and associated implementation challenges and strategies in ways that could inform future decisions about whether and how to adopt Khan Academy for classroom use.

SRI researchers did collect math achievement data and nonachievement, attitudinal measures for students in classrooms using Khan Academy as part of this pilot effort and examined in a small sample of sites the relationships between these outcomes and detailed Khan Academy use data collected automatically as students worked online. We present these findings, but with the reminder that these analyses are correlational and do not constitute definitive evidence with respect to Khan Academy impacts. Students' outcomes relative to expectation are affected by the totality of their educational experiences, and across all but one of the sites, Khan Academy was only one part of a much larger system of curriculum and instruction rather than the sole—or even the primary—mechanism for math learning.

Despite these limitations, we realize that educators considering adoption of Khan Academy are eager to see student outcomes, and would prefer having access to preliminary, inconclusive data to flying blind. We urge readers making inferences about how Khan Academy may have contributed to student outcomes at the study sites to keep in mind each site's use model and purposes, as well as other contextual features. By considering student outcomes in context, readers can gain initial insights into the range of outcomes that might be expected for students using Khan Academy for different purposes and in different ways.

The remainder of this report consists of four sections. First, we describe how Khan Academy tools and resources evolved in ways that made them easier for teachers to use and more valuable for classroom instruction. This section describes the extensive communication between Khan Academy and school staff, and the rapid development of Khan Academy features and content in response to teacher suggestions and requests. The next section describes the pilot test samples for school year (SY) 2011-12 and SY 2012-13 and the variety of use models observed in these different study sites. This section is followed by a description of the findings of SRI's analysis of the extent to which various sites had their students use Khan Academy and the factors correlated with differences in the amount and pattern of Khan Academy use. Next, we present a section describing analyses of the relationship between the extent of Khan Academy use and student achievement gains in math, and improvements in a set of important nonachievement outcomes. The final section draws implications from the descriptive analyses for future efforts to design, evaluate, and implement similar blended learning approaches. A set of appendices present details about the Khan Academy interface, pilot site use models, our data collection procedures, and data processing and analysis.

The Evolution of Khan Academy in Partnership with Schools

A Brief History of Khan Academy

The story of Khan Academy's beginnings has received extensive coverage in the media and elsewhere. In 2006, Sal Khan, while still working as an analyst for a hedge fund on the East Coast, started creating and posting a set of 8- to 10-minute long math videos on YouTube to provide remote tutoring to a group of his school-aged cousins living in New Orleans. Because the videos resided on YouTube, they were available to anyone with an Internet connection and, almost overnight, tens of thousands of people around the world searching for online resources to teach and learn math began to discover them and leave comments, thanking Sal for his efforts and describing how Khan Academy helped them achieve their academic goals. By 2009, Sal had dedicated himself full-time to expanding the Khan Academy video collection, and by 2010, with nearly a million unique visitors, the nonprofit Khan Academy organization was formed with funding from private benefactors, Google, and the Bill & Melinda Gates Foundation. With its mission to provide "a free world-class education for anyone anywhere," the new organization got to work on expanding its resources to include not only videos, but also practice problem sets; progress reports for teachers and students; gaming mechanics (points and badges); and content other than math, including art history, macroeconomics, and computer programming.

Although the YouTube videos are the best known aspect of Khan Academy, we found that teachers and students in the classrooms in our sample were attracted to other aspects of the system. These included problem sets that helped students practice newly learned skills and that provided them with immediate feedback and hints when needed;

reporting features that helped students monitor their progress and aided teachers in monitoring the progress of the whole class and in identifying individual students who were struggling; and game mechanics—the ability to collect "energy" points and badges as a student completed problem sets—providing extrinsic motivation, rewarding students for their progress and efforts, and spurring them to get to the next level. Appendix A provides examples of problem sets, reports, and gaming mechanics currently available on the Khan Academy website.

Khan Academy Development during the Study

The experience for teachers and students changed in many ways over the course of the implementation study as Khan Academy resources expanded and new features were added. Working in close collaboration with school administrators, teachers, and students in the pilot schools, as well as with members of the SRI research team, Khan Academy made significant changes to its platform, content, and the organization of content in efforts to make its resources a more effective tool for classroom use.

Starting in fall 2011, Khan Academy concentrated on building out its math content, mostly by expanding the coverage of its problem sets but also by adding new videos to close identified gaps in curriculum coverage. By the end of SY 2011-12, more than 3,000 YouTube videos and 350 problem sets targeting a specific math concept were available for teachers and students. (At the start of SY 2011–12, approximately 2,500 videos and 130 problem sets had been available.) Despite the tripling of the problem sets available between September and June, significant gaps still existed in the Khan Academy exercise topics relative to the Common Core State Standards during SY 2011-12. In some cases, those gaps limited teachers' ability to assign Khan Academy problem sets linked to the curriculum topics they were covering. During SY 2012-13, approximately 400 math videos and 115 problem sets were added to the Khan Academy site.

Khan Academy continued to identify gaps in the math content, and started preparing in spring 2013 for an intensive effort to provide coverage across the Common Core State Standards. Khan Academy hired a team of mathematicians, curriculum specialists, teachers, and math tutors to support this effort. By SY 2014-15, Khan Academy expects to have comprehensive, Common Core-aligned content across all K-12 grades available for users.

Table 1 summarizes significant changes to the Khan Academy website made since fall 2011. The changes are organized by the issue the changes addressed.

Table 1. Summary of Major Changes Made to Khan Academy Website During the Study

Issue	Resolution
Teachers and students needed efficient ways to find relevant videos and problem sets that were aligned to the curriculum.	✓ Created new videos and problem sets specifically tailored to each grade level so that teachers and students could identify the appropriate content for their grade level. ✓ Mapped the content (videos and problem sets) to the Common Core State Standards by grade level.* That enabled teachers to identify all available content associated with a particular standard and grade level. ✓ Added search capability so students could quickly find videos and problem sets by topic. ✓ Created a problem set browser that allowed teachers to easily find problem sets aligned with their curriculum using keyword search. ✓ Reorganized the math content into tutorials, which provided videos and problem sets in a logical sequence for each topic. An example is *Subtraction with Borrowing.***
Teachers wanted to be able to assign Khan Academy problem sets to students and find easier ways to monitor students' completion of the assignments.	✓ Created capability for teachers to recommend content for students to view and work on. ✓ Added a goal-setting feature that allowed students to add specific videos and/or problem sets to view and complete as a daily, weekly, or longer-term goal. The active goals appear on the top of every Khan Academy page next to the student's name. Teachers can track their students' progress against these goals when accessing the teacher view of the tool. ✓ Upgraded teacher reports with simplified, customizable summaries of student data at the class and individual student level. Teachers now can filter class- and student-level data by the specific problem sets assigned as well as by time periods.***
Teachers needed more supports for effective use in the classroom, including examples of how other teachers are using Khan Academy in classrooms and more efficient ways to enroll students on the site	✓ Implemented a new sign-on process allowing for bulk enrollment along with step-by-step guides. ✓ Updated teacher resources with information, tips, and guides on different ways to use Khan Academy in a classroom. Resources were organized into video-based tutorials. The resources also included a set of downloadable curriculum plans developed by teachers using Khan Academy for different grade levels to demonstrate how different teachers are integrating Khan Academy into their curriculum. ****
Teachers' wanted to improve students' use of the videos as a resource and source of review when working on Khan Academy problem sets.	✓ Located the related videos on the same page so that students working on problem sets could more easily locate and review the video content if needed. ✓ Added the ability to fast-forward through videos during playback to help students locate the information they needed more efficiently.

*To view Common Core mapping, go to https://www.khanacademy.org/commoncore/map.

**To see an example of the Subtraction with Borrowing tutorial, go to https://www.khanacademy.org/math/arithmetic/addition-subtraction/sub_borrowing/v/basic-regrouping-or-borrowing-when-subtracting-three-digit-numbers.

***For an interactive demo of progress reports available to teachers and coaches go to https://www.khanacademy.org/coach/demo.

****For a list of available curriculum plans go to https://www.khanacademy.org/coach-res/virtual-teacher-workshop/planning-your-implementation/a/integrating-khan-academy-into-your-curriculum.

A Major Redesign

In Summer 2013, Khan Academy released a major redesign of its website motivated by the desire to help students stay focused on relevant content and retain what they have learned.

In July 2013, Khan Academy launched a major redesign of its website with the release of its grade-level "missions" and a new "learning flow" and "learning dashboard." The redesign was introduced to help students, particularly those who used Khan Academy independently of the classroom, focus on working in the appropriate content area and to retain what they were learning. From their dashboard, students can select a mission, and while in the mission, have access only to the videos and problem sets mapped to a single grade level (e.g., the grade six mission) or course content (Algebra I) along with videos and problem sets associated with any prerequisite skills.

On the basis of student performance on an initial pretest, established learning progressions, and performance of similar students, the site recommends the next set of skills the user should work on (teachers may override the recommendation with their own selections). Students are given opportunities to view videos and practice a set of related skills in a topic area and, 16 hours after successfully practicing these skills, are given another opportunity to complete a "challenge" consisting of approximately 8 problems—one for each subskill they have practiced—to test what knowledge they have retained. A student receives an indication that he or she has "mastered" a specific skill only after successfully completing the relevant problems embedded in 3 such challenges, each separated by a minimum of 16 hours. After some more time has passed, as an ongoing check of knowledge retention, subsequent challenges will continue to include problems on topics for which students have already achieved mastery.

Students earn points for successfully completing single-skill practice sessions and challenges on their path to mastery. As a motivational tool, students are provided with a visual representation of their progress. An array of small blocks appears in the top corner of the students' dashboard page, with each block representing a single skill for which students will have to demonstrate mastery to complete the grade-level mission. As students complete practice problems and challenge problem sets successfully, the boxes are colored in, with the shade darkening with each successful step made towards mastery.*

* For a demonstration of students' navigating through a mission see https://www.khanacademy.org/coach-res/virtual-teacher-workshop/planning-your-implementation/a/missions-focusing-students-on-meaningful-content

Professional Development and Ongoing Support Provided to Pilot Sites

Khan Academy supported schools in a variety of ways during the course of the study. Throughout each study year, members of the Khan Academy implementation team provided sites with ongoing support both in-person and by phone and email. Teachers also had access to Khan Academy's online teacher resources, including video guides to the website's features and case studies of different models of use of Khan Academy by teachers around the country.[2]

Khan Academy assigned a member of its implementation team to support each research site by briefing teachers on new website features and by indicating how other teachers were using the resources to address classroom needs. Khan Academy staff worked closely with teachers to learn about their needs and the needs of their students. Khan Academy staff also used this time in the field to observe how teachers were using Khan Academy, and to solicit concerns and suggestions for refinements, including improvements in content coverage.

During the first semester of SY 2011-12, Khan Academy implementation team members made regular scheduled visits to all sites, some on a weekly basis, and were available to teachers via e-mail and phone. These visits and communications continued into the second semester for a core group of sites, including Sites 1–4. The other sites received significantly fewer face-to-face visits from Khan Academy staff during the second semester, with most questions and communications handled through e-mail and phone.

In SY 2012-13, the Khan Academy school implementation team continued to support the sites participating in the research but to a much lesser extent than in SY 2011-12. Each site was visited 5 to 6 times during the school year by a dedicated member of the implementation team who worked with individual teachers, received their feedback, and informed them about upcoming or just released upgrades to the content and the website.

During SY 2011-12, Site 1, the largest teacher and student sample in the study, coordinated and provided four additional professional development days across the year for its school administrators and for all fifth- through seventh-grade math teachers and a few eighth-grade teachers who volunteered to pilot Khan Academy in their classrooms. Approximately 50 teachers participated in each session, which focused on the use of Khan Academy and other online resources to support the district's vision for personalized learning and for preparation of students for the information society. The sessions included presentations by Khan Academy staff. During the same school year, Khan Academy held two professional development events for teachers in the other sites (one in the summer and the other in the fall). Approximately 25 teachers attended each event. The events focused on best practices for integrating Khan Academy into the typical math curriculum and on using Khan Academy to differentiate instruction.

[2] For examples of resources available for teachers see https://www.khanacademy.org/coach-res

Emerging Models of Khan Academy Use in Schools

In this section we begin with a description of the research sites that participated in the two years of the study. We also provide detailed descriptions of several use cases to show the variety of ways that teachers were using Khan Academy to support their instruction.

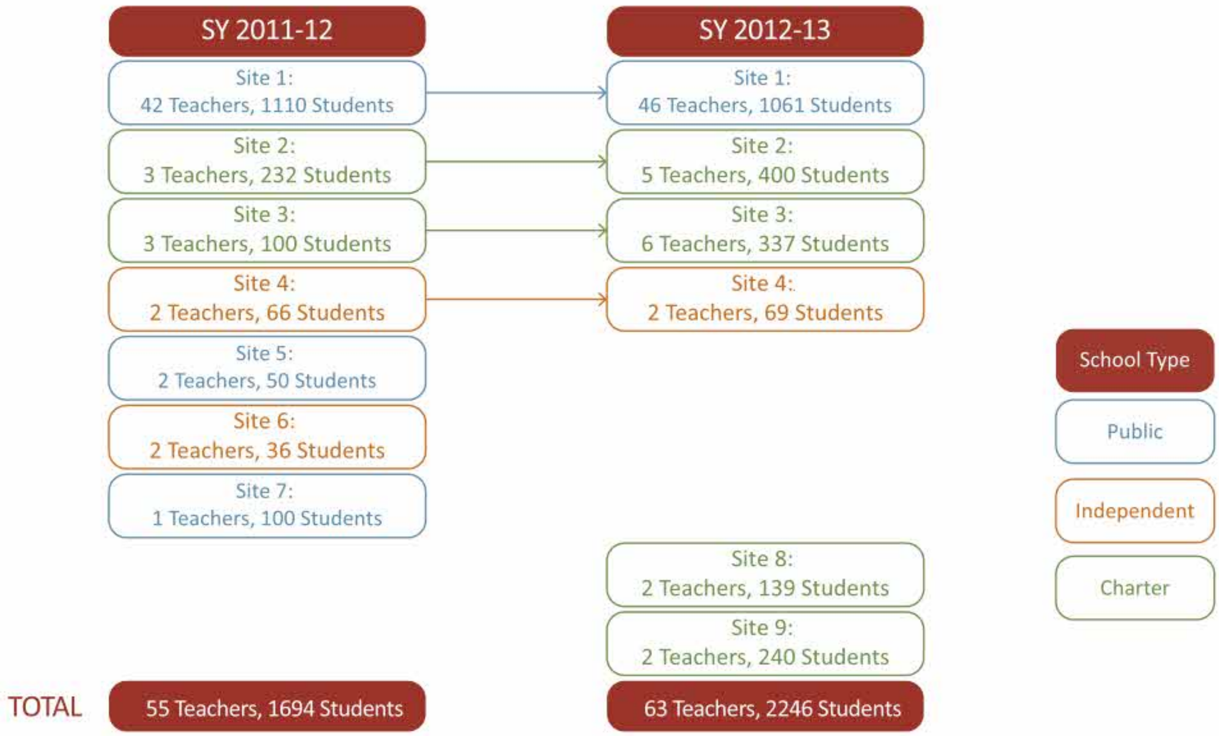
Research Sample

Khan Academy recruited a variety of California schools to participate in a two-year pilot starting in fall 2011. Of these pilot sites, nine were selected for inclusion in this research for one or both study years.[3] The research team selected the study sites in collaboration with Khan Academy to represent a range of ways that Khan Academy was being used for math instruction support for different types of students. Pilot school sites were also selected to represent a range of governance structures and school types—public school districts, charter management organizations (CMOs), and independent schools; and elementary, middle, and high schools. A majority of the sites served students from low-income communities, and several were using Khan Academy specifically to support the math instruction for students with the greatest needs.

Seven research sites were included in the first year of the study (Sites 1-7) and six in the second (Sites 1-4, 8, and 9). For the second year of data collection, SY 2012-13, the research included four of the seven first-year sites (Sites 1-4) that had demonstrated a unique approach to classroom use of Khan Academy and from which the

[3] Three of the original pilot sites that began piloting during SY 2011–12 were not included in the research. These were independent schools serving middle- to high-socioeconomic status student populations and received less implementation support from Khan Academy relative to the other schools.

Figure 1. Participating Sites and School Structures



research team had collected data on student learning.[4] In addition, we invited two more schools (Sites 8 and 9) that had started using Khan Academy the year before, but outside of the formal pilot, to participate in the research in SY 2012-13; Khan Academy indicated that these two sites had been making considerable efforts to use Khan Academy to improve instruction and learning. Figure 1 summarizes characteristics of the participating sites including the number of schools, teachers, and students participating in the research in each year of the study. Table 2 shows the demographic characteristics of the students served by each study site.

Appendix B provides a profile for each of the research sites, showing their years of participation in the research, the student communities they served, and details about their goals and implementation model for Khan Academy use.

[4] Three schools that participated in the SY 2011-12 research were not included in the SY 2012-13 data collection. Two of these schools made only limited use of Khan Academy in SY 2011-12 and, by design, none of the three sites participated in the student learning outcomes portion of the data collection.

Use of Khan Academy in Study Schools

Teachers can use Khan Academy in classrooms in multiple ways, including as:

- **A personalized learning tool—**Khan Academy can be used at the beginning or end of class or after school to differentiate instruction and enable students to learn and practice content relevant to their needs and at their own pace, whether they are below, at, or above grade level.

- **A supplemental resource—**Teachers can assign a common set of Khan Academy problems related to the curriculum for students to practice in class or at home, and teachers can check students' completion and comprehension through Khan Academy's real-time reports. Students can use Khan Academy videos to review content as needed.

Table 2. Sample Characteristics and Student Demographics for Participating Schools

Site	School/Site Type	Schools SY 11-12	Schools SY 12-13	Grades	Free-or-Reduced Price Lunch (%)	African American (%)	Hispanic (%)	White & Asian (%)	ELL (%)
1	Public	8	7	5–7	3	> 1	8	80	9
2	Charter	2	2	9, 10	45	7	50	35	-
3	Charter	2	3	6, 7	78	37	51	10	20
4	Independent	1	1	6–8	72	33	63	3	-
5	Public	2	DNP	5, 7	40	3	41	44	34
6	Independent	1	DNP	4, 6–8	-	-	-	-	-
7	Public	1	DNP	6	98	4	85	1	-
8	Charter	DNP	1	9-10	54	5	92	0	26
9	Charter	DNP	1	6-8	87	>1	84	>2	TBD
Total		17	19						

DNP = Did not participate in research during that year's study.

- **A flipped classroom model—**Teachers can assign videos on new concepts for students to watch at home and then use class time to extend the video lectures through discussion and interactive activities, checking for understanding and addressing student questions, or working with individual or small groups of students as the other students work through related Khan Academy problem sets. In this model, videos are used to teach new content in place of teacher presentations.

- **A primary instructional resource—**Khan Academy videos and problem sets can be used as the primary learning resource both in class and at home. Videos are used to present new content and problem sets used to provide practice.

Considerable variation in Khan Academy use occurred across sites during the two years of the implementation study, but all sites used it to support a blended learning model: that is, in conjunction with teacher-led direct instruction.[5] In theory, Khan Academy could be used as the core or only curriculum resource for math instruction with each student working independently. With the exception of one site in one of the two years (Site 2), schools and classrooms in the pilot study did not choose to use Khan Academy that way or were unable to use it that way for a number of reasons, including gaps in the content coverage at some grade levels and lack of regular access to computers in the classroom, particularly in Site 1 during SY 2011-12. Instead, Khan Academy was used as a supplemental resource to reinforce teacher presentations, allow for additional practice, or serve as a separate intervention or enrichment activity. Even though Khan Academy is primarily known for its video library and has been

[5] For classifications of common blended learning models, see the 2013 Christensen Institute report, Is K–12 blended learning disruptive? (http://www.christenseninstitute.org/publications/hybrids/).

associated with the flipped classroom model, teachers participating in the research were more focused on exploring how online, personalized practice opportunities for students could be incorporated into their existing instructional activities. In most cases, when students used the videos, they did so in class to review concepts as they worked through the Khan Academy problem sets. Few teachers used the videos in their lessons to introduce new concepts and skills.

Sites' implementation practices varied along several critical dimensions (see Table 3), including how extensively Khan Academy was integrated with core instruction, the students who were targeted, whether students used Khan Academy independently or collaboratively, students' access to technology, and the degree to which pacing was individualized. For example, some teachers used Khan Academy to free themselves to work directly with a small group of students who were struggling while other students worked independently on Khan Academy. Several schools used Khan Academy solely as an intervention to support struggling math learners, with little or no use of it by other students. In two sites, teachers made significant efforts to integrate Khan Academy as a primary instructional activity within the daily core instruction. And during SY 2012-13, one site experimented with a self-paced, competency-based model, using Khan Academy content as the primary instructional resource.

Although most of the variation in Khan Academy use occurred among different sites and schools as illustrated in Table 3, we also observed significant variation within schools and even within a single teacher's class over time as teachers learned what Khan Academy had to offer and how best to use it to support the kind of teaching and learning they wanted for their students.

Table 3. Features of Khan Academy Implementation at the Research Sites

Research Site	Implementation Features					
	Integrated into lesson or separate from lesson	Used as an intervention	Peer-to-peer interactions encouraged	Required use outside school day	Classroom vs. individualized pacing	Small group instruction and Khan Academy use
1	Both	Middle school only	Some classrooms	No	Both	Varied by teacher
2 (SY 2011-12)	Both	No	Yes	Yes	Both	Yes
2 (SY 2012-13)	Integrated	No	Yes	No	Individualized	Yes
3	Both	Yes (1 of 3 schools)	Some classrooms	Yes	Both	Yes
4	Both	No	Yes	No	Both	Yes
5	Separate	Middle school only	Elementary school only	No	Both	Elementary school only
6	Separate	Yes	No	No	Both	Yes
7	Separate	No	No	Yes (after-school program)	Individualized	Yes
8	9th grade (both), 10th grade (integrated)	Yes (9th grade, algebra readiness)	Yes	No	Both (algebra readiness), classroom (algebra 1)	Yes (algebra readiness and learning lab)
9	Both	Yes (seventh/ eighth grade)	No	No	Both	Yes (rotation model)

School Year 2011-12: A year of orientation and experimentation

The first 2 months of SY 2011–12 were used to orient teachers and students about Khan Academy, its features, and available resources. Khan Academy staff guided teachers during the initial face-to-face professional development sessions and Khan Academy implementation team members conducted follow-up visits to enable students to start using Khan Academy as soon as possible, letting students explore the resources and features in a self-directed, self-paced manner with little or no teacher direction. Khan Academy staff also recommended that students begin their exploration of Khan Academy content by starting with simple arithmetic and then challenging themselves to see how far they could progress as the content became increasingly more difficult. Many of the teachers across the sites implemented this recommendation during the first 4 to 6 weeks of the school year. Many students moved quickly through topics they had mastered in previous grades before their pace slowed as they encountered content at their current grade level and above. A few students did manage to work successfully through all the problem sets then available by the start of winter break.

This introductory period also allowed teachers to explore the features of the website, particularly the Khan Academy reports of student progress. While students were becoming familiar with the website and filling in some gaps in basic skills, teachers were able to identify those who were struggling with below-grade-level content and thus were candidates for remedial support. Many teachers also used this time to explore the Khan Academy experience from the student's perspective by working through some (and in a few cases nearly all) of the videos and problem sets themselves.

After this introductory period, many teachers began to try to integrate Khan Academy into their lessons following an October professional development session that demonstrated several models for using Khan Academy to support classroom instruction. As a result, compared with its use during the first 2 months of SY 2011-12, from October 2011 onward Khan Academy became more integrated with and connected to the curriculum and daily lessons in the participating classrooms. During SY 2012-13, most teachers continued to experiment with different ways to use Khan Academy with their students, but most favored using it to support and reinforce what they taught in the daily lesson.

Sample Use Cases

This section presents examples from four research sites to illustrate some of the different models that emerged over the course of the research. Each model reflects the intentions and instructional mission of its parent site and schools. While Khan Academy continues to evolve, develop new features, and refine and expand its content, we believe that these preliminary use models represent how teachers are likely to continue to use digital resources like Khan Academy to support instruction in the classroom.

Site 2. Using Khan Academy in a Self-Paced, Competency-Based Instructional Model

Site 2 is a charter management organization operating six small high schools in California. In SY 2012-13, two of the schools, collocated in an urban center, piloted a self-directed, competency-based instructional model for their math program supported with Khan Academy online math resources. Of the schools' students, 45% qualified for reduced-price lunches. This profile describes the ninth- and tenth-grade mathematics courses in these schools in SY 2012-13 where as many as 200 students assembled for a daily 2-hour block of math instruction.

The Site 2 schools seek to prepare students for college by having students assume more responsibility for their self-directed learning. Believing that noncognitive factors such as grit and perseverance are critical to students' higher education success, these schools hope to develop students who can self-advocate for their learning, establish learning goals based on what they want to achieve, and persevere to achieve those goals. The schools' new math program was thus designed to support students' simultaneous development of content knowledge, academic skills, and critical noncognitive skills.

The model evolved over the school year; by spring, the schools' daily routine entailed the 2-hour math block divided into two 1-hour learning sections: one student-directed and one teacher-directed. For 1 hour, half the students met in a large room and engaged in self-directed, self-paced math instruction with little or no direct instruction from teachers—what the school called "Personalized Learning Time." Teachers were available to answer questions, and students were encouraged to seek help from peers; for the most part, however, students worked independently guided by "playlists," (curated digital instructional resources, including Khan Academy videos and problem sets, online textbooks, and simulations, accessed through the school's learning management system). All students had access to laptop computers and, progressing at their own pace, spent most of the hour interacting with the digital resources to learn the topics in the curriculum sequence.

At the start of the school year, students were assigned topics and corresponding playlists appropriate for their proficiency level, determined by performance on an online standardized test. Students progressed at their own pace through the rest of the curriculum. When they felt they were ready to prove mastery of a concept or skill in a playlist, students took an online 5-item test proctored by a "learning coach." If they passed the test by answering 4 of the 5 questions correctly, they moved on to the next playlist and topic in the sequence.

To learn the material students could use as many playlist resources as they needed and could also enlist nonplaylist resources, including other online resources and their peers. Khan Academy videos and problem sets were the primary resources listed across playlists, and our observations and interviews indicated they were the most widely used of the instructional resources, the problem sets in particular.

Time was set aside during self-directed work time for students to identify their learning goals and plan what they needed to do to meet them, as well as to reflect on their progress toward those goals. Students spent the first 10 minutes of each self-directed session planning how to use their class time and identifying which digital or other resources they needed to meet their specific objectives for that day. After they finished their work, they spent 10 minutes reflecting on what they had learned, including writing about that day's learning experience, completing a survey, or otherwise self-evaluating their progress. By the second semester, students who were not making adequate progress were required to fill out forms that described their step-by-step plans for catching up.

During Personalized Learning Time, students, although working independently, had access to two teachers or adult volunteers with math backgrounds who answered students' work-related questions and provided tutoring as needed. Students were also encouraged to ask their peers for help and many did so. In general, the frequency of student conversations during the personalized learning time was noticeably greater than in a traditional classroom. However, our observations indicated that most conversations were about math or entailed one student helping another navigate through the school's learning management system or use a digital playlist resource.

The other half of the students engaged in teacher-directed learning, with about 25 meeting in rooms surrounding the independent learning space. These teacher-directed sessions (also known as "Core Time") served to (1) help students develop higher-order thinking skills and practices aligned with the Common

Core (e.g., reasoning abstractly and quantitatively, constructing viable arguments); and (2) allow teachers to meet with individual students and check on their course progress. A typical Core Time session consisted of three blocks of 20 minutes each: (1) teacher presentation and discussion, (2) independent work time, and (3) student-teacher conferences.

Every two weeks, Core Time focused on a different higher-order skill called out in the Common Core (e.g., problem solving with persistence, attending to precision). First the teacher indicated the importance and application of the skill in different real-world situations. Students then demonstrated their emerging mastery by applying the skill and developing content knowledge for a set of problem-based scenarios (e.g., design of a chicken coop, development of a budget for a school fundraising event). The solution to each problem required different content knowledge, and the problems assigned depended on the student's progress in Personalized Learning Time. Students had to solve five applied problems over the school year; each problem required one or more weeks to solve, depending on its degree of difficulty. Grounding instruction in the higher-order skills associated with the applied problems was designed to support students' practice and skill development. In conferences, teachers assessed the students' ability to successfully apply the higher-order thinking skills to the problem scenarios and provided feedback for doing so.

Given that students' curriculum progress was self-paced, progress was closely monitored. Staff used information about the number of assessments students completed successfully during Personalized Learning Time to identify those who were falling behind. (The teachers did not use the Khan Academy reports to monitor student progress.) Teachers then worked with those students to develop "back-on-track" plans that listed the steps students needed to take to finish the course by the year's end. Teachers and the learning coaches were regularly updated about students' progress toward achieving their plans. Students who continued to fall behind received daily check-ins from one of the instructional staff.

Site 4. Use of Khan Academy to Facilitate Self-Paced Learning

Site 4, a small independent grade 6 to 12 school, was founded with the mission of closing the achievement gap for minority students. All Site 4 students, who mainly come from the surrounding low-income community, are people of color, and 97% will be first-generation college students. Students are prepared for 4-year colleges, and 100% of graduates have thus far been accepted to 4-year institutions of higher education. The school's vision is to simultaneously challenge and engage its students, with many layers of support offered. Students' school day is extended, with a mandatory late-afternoon session for completing homework; one-on-one tutoring is also available, as is a boarding section for students most in need of a more supportive living environment.

The school's grades 6 to 8 math program started using Khan Academy in SY 2011-12 when two laptop carts of notebook computers were acquired, making one-to-one computing available every day.

One of the school's goals for SY 2012-13 middle school use of Khan Academy was to allow students to move through the math curriculum at their own pace. That had not been possible in SY 2011-12 because the teachers had lacked sufficient time to map Khan Academy content to each of their lessons. However, after they became familiar with Khan Academy content and leveraged Khan Academy's mapping of its content by grade level, in the latter half of the school year the teachers did develop curriculum guides. In conjunction with newly introduced math topics, the guides assigned Khan Academy videos and problem sets to students. During summer 2012, the teachers collaborated to build on their prior school year's work and to map the entire middle school math curriculum to relevant Khan Academy content. The teachers then created a set of instructional packets that were aligned with the scope and sequence of the grade-level curricula. The instructional packets included:

- A "playlist" of Khan Academy videos and problem sets organized by math topic. Students, although not required to view Khan Academy videos or complete the problem sets listed, were required to record any Khan Academy problem set they completed on a form in the packet.

- A list of the homework assignments (textbook problems) with a place to record when they were completed and how many problems were answered correctly.[6]

- Pen-and-paper worksheets and quizzes that needed to be completed to receive a passing grade.

This profile features the model the sixth-grade math teacher adopted in SY 2012-13. The teacher worked closely with the other middle school math teacher to plan lessons for the year, but implemented her own way of using Khan Academy to support the wide diversity of math abilities among her incoming students, who came from a wide array of elementary schools.

The sixth-grade math teacher grouped the curriculum into six "lands" and created an instructional packet for each. Because of their differing math abilities, students sometimes were working on different lands within the same class period. The "lands" and their order of appearance in the curriculum were:

1. Data and Statistics	**4. Decimals**
2. Number Relationships	**5. Percents, Proportions, Ratios, Rates**
3. Fractions	**6. Geometry**

Throughout SY 2012-13, math instruction was divided into segments of teacher-led and self-paced instruction. The teacher typically provided whole-class lessons twice a week during the regular 50-minute period. Those lessons served to introduce a common topic to all students, even if some students were not currently working on that particular land. During the other three days of the week, students used the instructional packets to guide their instruction. Khan Academy, along with supplemental worksheets, served as the core curriculum. Students worked at their own pace, some individually or in pairs, working with the Khan Academy resources for half the class. For the remaining half, students worked on worksheets, received support from the teacher or other students, or took a quiz.

The teacher encouraged the pairing-up of students so that students could support each other's learning when needed. To facilitate pairing, students listed their names on a whiteboard next to a topic they either needed help in or felt they could help other students with.

The introduction of self-paced instruction facilitated by the use of Khan Academy allowed the teacher to spend more time working with individual students and less time on whole-class instruction, something she preferred and believed benefitted her students. While the students worked through the content in their instructional packets, the teacher monitored their work on Khan Academy using the system's progress reports and met with students individually. The teacher's one-on-one sessions consisted of reviewing students' work, discussing how they were managing their time on Khan Academy, testing the student for purposes of promotion to the next land, and tutoring individual students on specific skills or concepts they were struggling with. The teacher publicly announced when a student was approved to move to the next land, and the whole class broke into applause.

[6] Students could work on their Khan Academy problems for homework, but doing so was discretionary because approximately one-third of the students did not have access to a computer or a reliable Internet connection at home.

Site 8: Use of Khan Academy to Improve Student Accountability

Site 8 was a charter high school open to all students in an urban neighborhood. Over 80% of the school's students are Latino and qualify for free or reduced-price lunch, and over 75% come from families whose home language is not English. Each ninth-grade class, where Khan Academy was used most intensely, had at least 26 students.[7] The school's educational vision emphasizes character building, responsibility, and defeating the "learned helplessness" that, according to school staff, developed during many students' prior schooling. Khan Academy served to efficiently hold all students accountable to the school's standards while helping students with the greatest needs inculcate the skills that had not been learned in prior grade levels and that were holding back new learning.

The vision for using Khan Academy in the 2012-13 school year grew out of a summer program that the school implements each year. In 2012, the school held a 4-week, Monday through Thursday, "summer success" program for incoming ninth graders, many of whom were years behind grade level in math, with critical gaps in basic math skills that made learning grade-level content difficult. When students were tested to determine their baseline math abilities, approximately one-third did not pass the tests and many did not complete assigned problem sets at home. The teachers decided to assign weekly problems sets from Khan Academy, monitor students' work on the assignments using the Khan Academy progress reports, and require students who did not complete their Khan Academy assignments by Thursday to attend a Friday session at the school to complete them. The teachers reported that having a real-time view into students' progress, which the reports provided, and students' knowing that teachers were closely monitoring their efforts towards completing the assignments and that there were consequences for not completing their work, contributed to greater student accountability over the course of the summer.

As the summer progressed, the teachers noticed a change in student work habits as they tracked student progress using the Khan Academy's teacher dashboard. Initially, many students waited until Thursday evening to start their problem sets and thus frequently they were required to attend the extra Friday session because they had not completed their sets. However, over time, most students completed the week's work sooner and thus avoided Friday attendance. Consequences for not completing math assignments continued into the school year: Students who failed to complete assigned Khan Academy problem sets had to stay after school to do so.

During summer 2012, a diagnostic exam was used to determine the appropriate math class for the incoming freshmen—an algebra readiness section or an Algebra I section. The one-third of students who scored the lowest on the diagnostic exam were assigned to the algebra readiness class. All freshmen also received additional math instruction in the "learning lab."

Algebra Readiness. The first semester's algebra readiness class focused on filling in gaps in students' math knowledge through work on Khan Academy problem sets and through teacher-led small group instruction. Each Monday, students were tested on the previous week's topics and were also pretested on the current week's topics. The test results indicated which students lacked required basic skills; those with skill gaps met in small groups with the teacher to receive instruction in those skills while other students worked on Khan Academy problems. In the second semester, instruction shifted to lessons on grade-level algebra skills. Each period started with direct instruction on a specific skill, with students then practicing that skill using Khan Academy problem sets.

[7] Khan Academy was also used in the Geometry class that was predominantly made up of tenth graders. However, it was used intermittently due to the lack of Geometry content available in Khan Academy through SY 2012-13.

During the lessons observed, students consistently helped one another complete the problem sets. Because the work was self-paced, peer-to-peer interactions generally concerned understanding the math content, not specific problems.[8]

Algebra I. In SY 2012-13, Algebra I instruction typically began with students working on an assigned set of problems at their seats. After they completed the problems, the teacher called on students to explain their answers. Given the "no opt out policy," once a student was called on, the teacher worked with that student until all questions the teacher posed were answered.

After 20 minutes of teacher-led instruction, students began working on Khan Academy. Using minitablets, the students worked on teacher-assigned problem sets on topics aligned to the daily lesson. Once logged in, students stayed focused through the period, given that problems unfinished in class would need to be finished at home to avoid staying after school.

Learning Lab. In the 40-minute learning lab period, students spent most of the class on online math programs, in contrast to blended classroom instruction. Students worked on the assigned weekly problem sets listed on the school's online classroom management website. After completion of the assigned problem sets, students worked on uncompleted problems from past units.

The learning lab also allowed the teacher to provide additional instruction to students with the greatest needs. Khan Academy reports of student progress helped the teacher identify both students' skills and lack of skills. Small groups of the students who needed help with the week's problem sets then met with the teacher while the rest of the class worked with Khan Academy. The teacher encouraged the other students to help one another if they were stuck on a Khan Academy problem. She also announced which students had mastered that week's problem sets (termed "experts") so that struggling students could solicit their help in lieu of the teacher.

Teachers relied on Khan Academy progress reports to keep their math program running smoothly and, importantly, to hold students accountable for their work. In the learning lab, the teacher checked reports almost daily to identify students who needed small group instruction and to determine the skills she should emphasize. The teacher teaching the regular math sections typically reviewed student progress reports at the end of the week, unit, and semester to determine class grades (students' work in Khan Academy contributed 30% to their grade) and the students who should attend the after-school program to complete their Khan Academy assignments.

Examining the effectiveness of the school's new math program. To examine the potential effectiveness of the school's new math program on student learning, we compared the spring math test scores on the state standardized test (California Standards Test—CST) for students using Khan Academy with scores for similar students who attended the school in SY 2011-12 before Khan Academy was introduced. Appendix D provides details of this analysis. We made two comparisons: (1) spring 2012 CST scores for ninth graders taking Algebra 1 compared with the spring 2011 Algebra I scores, and (2) for many of the same students, spring 2013 tenth-grade CST scores for students taking geometry compared with spring 2012 tenth-grade geometry scores.[9] Thus, this design allowed us to examine the effects of one year and two years of exposure to the school's math program.

The results of the analysis were positive. We found moderate to large statistically significant effects at both grade levels favoring students who attended the school after Khan Academy was introduced. For

[8] The math classes and lab rarely used Khan Academy videos. Moreover, the school did not provide headphones, thus limiting student use of the videos. However, students could view the videos at their discretion.

[9] SY 2012-13 was the second year of exposure to Khan Academy for many tenth-graders, although the use of Khan Academy in geometry was limited compared to their freshman year.

ninth-grade students in SY 2011-12, the first year Khan Academy was used, the effect size was +.61 standard deviation units; for many of these same students in tenth grade, by the end of SY 2012-13, the effect size (+1.03) was even larger. An effect size of +.61 is equivalent to the median ninth-grade Algebra 1 student in the comparison group moving up 22 percentiles (from the 50th to the 72nd percentile) as a result of attending the school after the school introduced Khan Academy and other instructional reforms. Students in the new math program in ninth-grade Algebra 1 had a mean raw CST score of 365, which was 9% better than that of the comparison group the prior year (336). This class of Algebra I students in the new math program also had a 20% advantage in terms of the number of students performing at the proficient or advanced level (59% compared with 39%). In tenth grade, the second year of the new math program, the effect size of +1.03, translated to an improvement of 34 percentiles for the median student in tenth-grade geometry (from the 50th to the 84th percentile), a 14% gain in raw CST scores (280 to 319), and an 11% gain in the number of students scoring proficient or above.

These results appear very promising, but caution is required when interpreting them in terms of the contribution of students' use of Khan Academy to the estimated effects. Interpretation is complicated because Khan Academy introduction coincided with other changes in the school's math instruction beginning in SY 2011-12. For example, along with the introduction of Khan Academy during the regular school day, the school introduced Khan Academy to its summer math program, added an extra period of math for freshmen (learning lab), and instituted mandatory after-school sessions for students who did not finish their weekly assignments. Given Khan Academy's role in the school's overall math instruction to support student practice and monitor assignment completion, Khan Academy is clearly an important component of what appears to be an effective instructional system, but it should not be construed as the only factor contributing to the gains described above.

Site 9. Use of Khan Academy in an In-Class Rotation Model to Facilitate Small Group Instruction

Site 9 is a charter school serving a predominantly low-income, Latino community in an urban center in California. The school's stated aim is to prepare first-generation college-bound students for higher education. The school, which opened in fall 2011, currently offers grades 6 to 9 and will eventually house grades 6 to 12. For SY 2011-12, the school was one of the highest performing new middle schools in the state. During SY 2012-13, when the school participated in the Khan Academy implementation study, it enrolled 265 students in grades 6 to 8. The school started its use of Khan Academy during SY 2011-12, with Khan Academy integrated into the weekly curriculum as a supplemental instructional activity. Students were expected to complete weekly teacher-assigned problem sets associated with daily lessons. This profile highlights a model of Khan Academy use implemented by the school's sixth-grade math teacher in SY 2012-13.

One teacher was responsible for all sixth-grade math instruction in a 2-hour daily math block. Given that her classroom did not have computers for every student, the teacher decided to use Khan Academy in a station-rotation model to help her differentiate instruction. Students were organized into groups by ability level, based on the teacher's judgments and her regular monitoring of student progress on the Khan Academy dashboard. At the beginning of the year, students rotated through three classroom activity stations—small group teacher-led instruction, time using Khan Academy, and independent practice using worksheets or taking an assessment. Groups rotated about every 30 minutes. During the second half of the year, after securing several additional computers for her classroom, the teacher organized her class into two groups; one half of the students received teacher-led instruction while the other half worked on Khan Academy. The groups switched places after 45 minutes. Each class began with a

20-minute warm-up consisting of announcements and mental math exercises before students joined their designated groupings.

The teacher-led instruction followed a common model for classroom-based math instruction. The teacher first took 5 to 10 minutes to introduce the day's topic, often linking the topic to the content of the previous lesson and varying the content of her presentation depending on the ability level of the group. Then she projected sample problems on the board and walked students through their solutions. The teacher also regularly monitored the students working on problems at their seats on their whiteboards. When ready, students held up their whiteboards to show the teacher their solutions. The teacher called on individual students to explain their solutions to their classmates, and called on other students to ask whether or not they agreed with the student's answer or had an alternative solution. Although the teacher did not show Khan Academy videos related to a specific lesson or assign students to watch them, she frequently watched the videos herself before a lesson, looking for instances where the videos presented alternative and equally valid solution strategies to the ones she had prepared for her lecture and sharing those strategies with her students during class time.

Students at the Khan Academy station managed their own learning during their session using the online resources. Students first logged into the online classroom management portal, Edmodo, to determine the Khan Academy problem sets the teacher had posted for them to work on. At the start of each week students were assigned three Khan Academy problem sets to complete by the end of the week. The problem sets varied in difficulty; two were directly related to topics being covered in the weekly lessons during teacher-led instruction, and the other was geared toward a necessary skill that the teacher determined students in a particular group needed more practice on. Frequently, students in a group would be assigned different problem sets, depending on their ability level; typically, one common problem set was assigned across groups and the teacher used it to determine students' grades for their weekly work on Khan Academy.

The teacher cited the immediate feedback students received as they worked through the assigned problems sets as most important benefit of using Khan Academy. Students immediately knew if their solution to a problem was correct or not, and, if their solution was incorrect, they could use the "hints" feature to see a step-by-step solution to the problem before trying a similar problem generated by the system. In this way, students could learn from their mistakes and make progress on an assignment. As this teacher noted, that is not the case with paper-pencil worksheets: without immediate support from the teacher or another adult or student, a student struggling with the content may hand in a worksheet with all problems incorrectly answered and may have to wait a day or more before receiving teacher feedback. In this classroom, while the teacher was delivering direct instruction to one group of students, the students working on Khan Academy were still able to receive feedback on their work, without the intervention of the teacher.

Implementation Findings from Khan Academy Pilot Schools

In this section we provide a set of findings from our implementation research describing how Khan Academy was used by teachers within and across sites and the factors that influenced that use. These findings are based on an analysis of qualitative and quantitative data collected through classroom observations, interviews, and student use files archived by Khan Academy. The results presented here should not be interpreted independently of how Khan Academy was used across and within each of the research sites. In many ways, it is helpful to think about the patterns in students' use of Khan Academy as an outcome of the different instructional models teachers adopted. As described above, teachers' use of Khan Academy, the frequency of use, and the role that Khan Academy played in their instruction (e.g., integration with core instruction or as a separate unconnected activity) varied across and within sites. In addition, the time allocated for math instruction varied by site and grade level; Sites 2, 3, 4, 8, and 9 dedicated 80 minutes or more to daily math instruction; other sites spent less than an hour. Teachers' access to anytime one-on-one technology in their classrooms played a role as well, particularly during SY 2011-12. In that year, only a third of the teachers using Khan Academy in the pilot study indicated that they had access to enough computers to support one-to-one computing at any time. Both factors—instructional time and student access to computers—influenced how and how often Khan Academy was used.

Data Sources

Findings presented in this implementation report are based on data collected from the participating schools during SY 2011–12 and SY 2012-13. SRI researchers collected information about how Khan Academy was being used and about its potential benefits by conducting site visits to schools, districts, and charter management organizations; making classroom observations; interviewing organization and school leaders and teachers, parents, and students; and conducting a teacher and a student survey. In addition, members of the Khan Academy implementation team, who were also interviewed before each of our site visits, contributed valuable information about the supports provided to schools and insights into practices and factors that might be associated with more effective adoptions. That information was then confirmed through the SRI research team's fieldwork and surveys. When appropriate, we present findings from our analysis of student outcomes—their attitudes toward and interests in math, and their scores on standardized achievement tests when available—and examine the association between levels of use and improvements in these outcomes. Appendix C includes a summary of the scope of the data collection activities, including response rates for teacher and student surveys.

In addition to the data collected by SRI researchers, our analyses used data from the students' user log files that Khan Academy automatically generated over the school year. Khan Academy archives considerable data on users' interactions with its content and the various features on its website. SRI worked with Khan Academy to identify indicators of how and how often various resources were used and for examining the relationships between students' use of Khan Academy and specific teacher practices, as well as learning outcomes. Khan Academy provided multiple use indicators for each student. Our analysis focused on the following general indicators of use: time spent on videos, time spent on problem sets, the number of videos watched, and number of problem sets successfully completed. Appendix C lists the full range of log data along with a description of how the user data was prepared for analysis.

We used these indicators to explore variation in Khan Academy use across research sites, factors affecting students' use of Khan Academy, and the relationship between Khan Academy use and student outcomes. Using these indicators, we were also able to analyze the amount of time students spent actively engaged with Khan Academy content; how time was apportioned between watching videos and working on problem sets; the degree to which students worked on content that was below, at, or above their grade level; and the number of problem sets students successfully completed.

Khan Academy Usage

Teachers used Khan Academy primarily as a supplement to core teacher-led instruction in most, but not all, sites during the course of the study. Most teachers in this study used Khan Academy to provide extended practice following the introduction of new concepts and skills by the teachers themselves. The primary Khan Academy resource used was the problem sets, with videos used mostly at the discretion of students.

Overall, teachers responding to our survey reported that, in supporting the instruction they offered, Khan Academy played its greatest role by providing students with practice opportunities (82% overall; 90% in SY 2011-12 and 73% in SY 2012-13) and allowing the teachers to provide small-group instruction to some students while others used the program (67%). Fewer teachers (20% overall; 29% in SY 2011-12 and 10% in SY 2012-13) indicated that Khan Academy played a role in introducing new concepts in a lesson.

Teacher reports suggested that Khan Academy supported students' learning by personalizing the learning experience; 84% of teachers reported that Khan Academy allowed students to learn at their own pace (73% in SY 2011-12 and 94% in SY 2012-13) and 72% indicated it met the needs and interests of different types of learners (67% in SY 2011-12 and 77% in SY 2012-13). Slightly more teachers saw it playing a greater role as an enrichment activity for advanced students than as a remediation tool (80% vs. 61%); fewer teachers saw it as playing a substantive role in promoting deeper learning (35% overall).

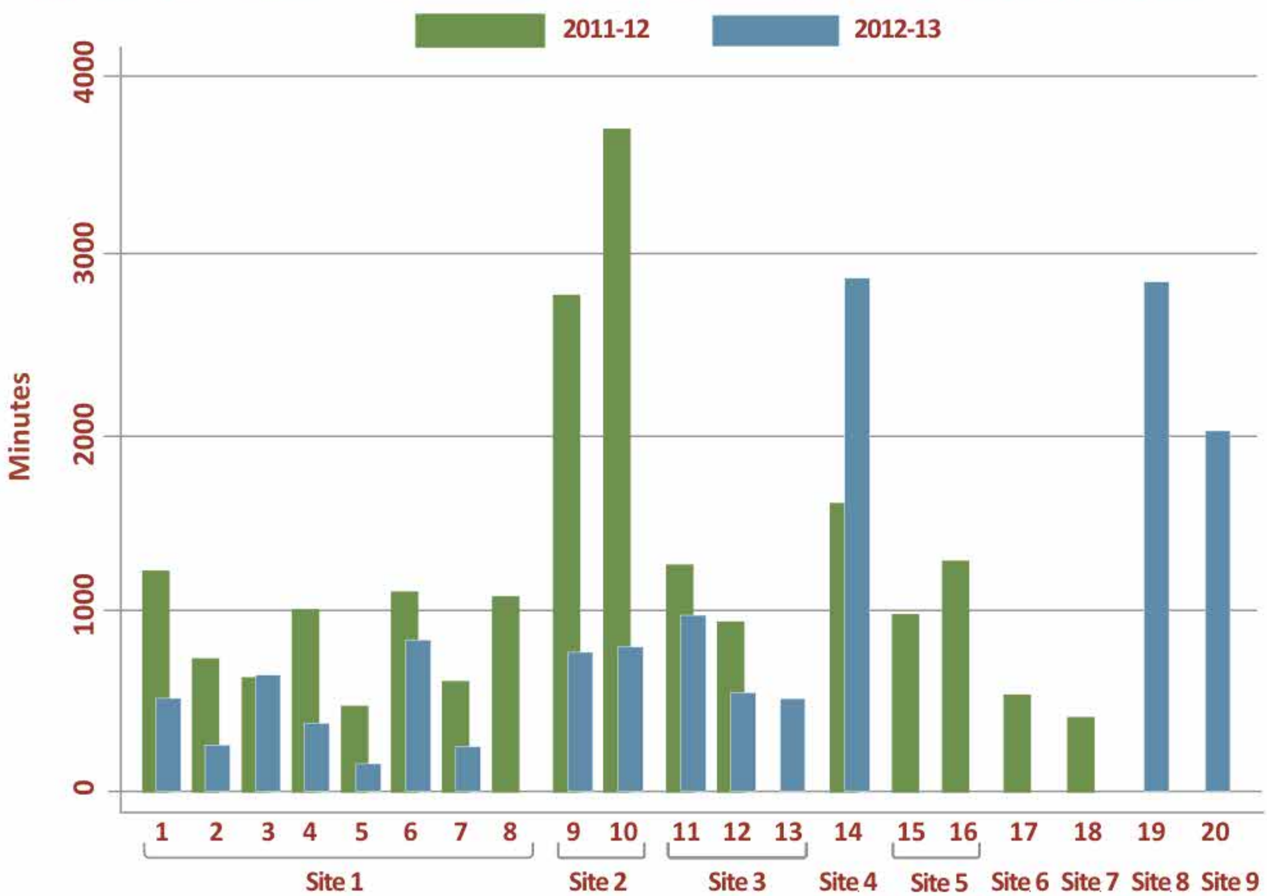
The time spent engaged with Khan Academy content varied widely across research sites. Figure 2 shows the median total amount of time (in minutes) that students spent working on Khan Academy across the two years of the study. The phrase *working on Khan Academy*, refers to the total time students spent watching videos or working on problem sets. It excludes the time students spent on the website logging in and out or engaging in other activities (e.g., updating their profile page, searching for content). Thus, this is a measure of the amount of time students spent actively engaged in a direct instructional experience on the website. The total time shown in Figure 2 includes students' use of the system both inside and outside school.

To better understand how students spent their time on Khan Academy, we compared the number of minutes they viewed videos with the time they spent in completing problem sets. Table 4 presents these results.

The time students spent working on Khan Academy varied considerably across and within sites and by year. It ranged from a low of 396 minutes (or 11 minutes per week assuming a 36-week school year) for the median student at Site 1, a public school district in SY 2012-13, to a high of 3,140 minutes of use (or 90 minutes per week) in Site 2 during SY 2011-12. With the exception of Site 2 where Khan Academy use in the first year of the pilot consumed 22% of the time allocated for math instruction, Khan Academy use represented less than 10% of scheduled math instructional time at the pilot sites.

The relatively high use of Khan Academy at Site 2 in SY 2011-12 relative to the other sites was supported by several factors: (1) anytime access to one-to-one computing within classrooms; (2) use of mandated completion of goals with consequences for lack of completion; (3) teachers' close monitoring of progress toward goals; (4) a planful integration with the core

Figure 2. Total Median Time Working on Khan Academy by Site, School, and Study Year



Note: Bars represent school median values.

Table 4. Median Number of Minutes Viewing Videos and Completing Problem Sets by Site and Study Year

Study site	School Year	N	Video minutes	Problem set minutes	Total Minutes
1	2011-12	1,005	50	712	846
	2012-13	892	28	364	396
2	2011-12	207	109	2,869	3,140
	2012-13	381	119	552	783
3	2011-12	92	19	1,091	1,165
	2012-13	184	24	638	686
4	2011-12	54	16	1,546	1,599
	2012-13	21	32	2,856	2,870
5	2011-12	90	14	1,007	1,070
	2012-13				
6	2011-12	29	80	478	535
	2012-13				
7	2011-12	101	51	319	419
	2012-13				
8	2011-12				
	2012-13	140	26	2,794	2,855
9	2011-12				
	2012-13	247	41	1,941	2,012

curriculum; and (5) extended instructional blocks (90 minutes dedicated to daily math instruction).

Use of Khan Academy in Site 1 and Site 2 schools participating in the research in both study years showed lower levels of use in SY 2012-13 than in the prior school year due to a shift in goals and priorities. Across the Site 1 district, use of Khan Academy was significantly lower in SY 2012-13 than in the previous school year. In SY 2011-12 the median student in the fifth and sixth grades in Site 1 spent slightly more than 23 minutes per week viewing Khan Academy videos and working through problem sets compared with 11 minutes per week in SY 2012-13. This decrease in Khan Academy use in Site 1 was anticipated for two reasons: (1) in SY 2012-13, the district's emphasis on the use of technology in classrooms extended beyond the use of Khan Academy, which had been its focus in SY 2011-12, and (2) Khan Academy, by design, significantly decreased its onsite support of the district in SY 2012-13 relative to the prior school year when it was common for Khan Academy school implementation staff to be in schools working with teachers one-on-one several times a month.

Site 2 also experienced a significant drop in its students' overall use of Khan Academy resources from year 1 to year 2 of the study as the school switched from a mandatory supplemental use model of Khan Academy in SY 2011-12 to a model of total student discretion concerning the use of Khan Academy as a part of the schools' self-directed, self-paced math instruction model. In this environment, students worked with Khan Academy resources as they saw fit, and the use of Khan Academy videos and problem sets declined to 22 minutes per week compared with 87 minutes per week in SY 2011-12 when use of Khan Academy was daily and mandatory.[10]

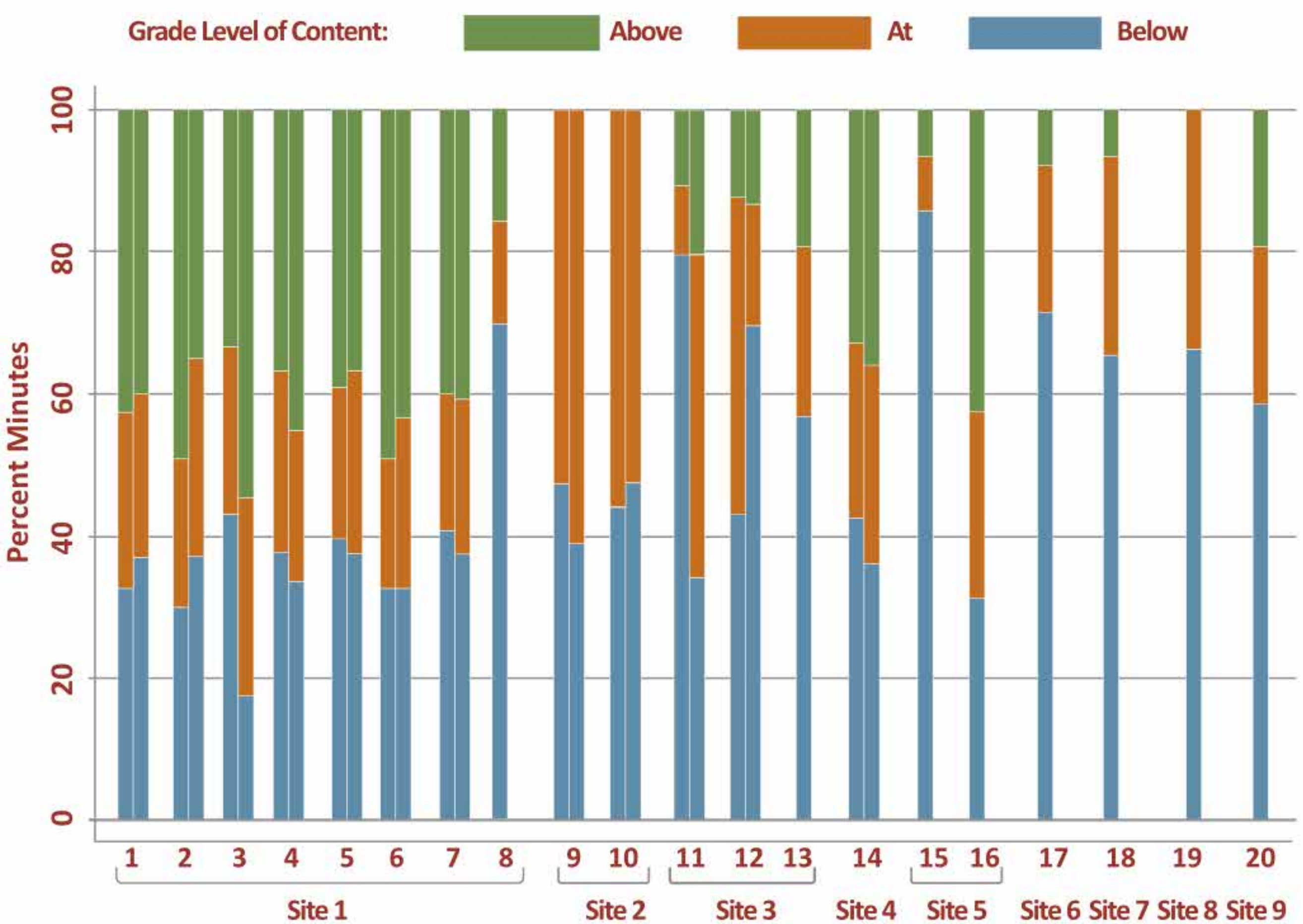
[10] The research team reviewed these results in summer 2013 with Site 2 staff. A member of the Site 2 leadership team confirmed that there was likely a significant decrease in the use of Khan Academy resources during SY 2012-13 compared to the previous school year due to the change of the role of Khan Academy in the curriuclum and that the size of the decrease reported here was in line with their expectatons. However, during SY 2012-13, there is a possibility that for some students not all the time they spent viewing videos and working on problem sets was logged by the system. When a student in Site 2 went to use Khan Academy, if that student did not log into Khan Academy using her Google account then that session on Khan Academy could not be easily identified within the logfile and therefore it wasn't included in an analysis of the overall use of Khan Academy by Site 2 students. The Site 2 staff member confirmed that only a small percentage of students would have not logged in through their Google account each time they used Khan Academy.

The overwhelming majority of the time students spent logged on to Khan Academy was devoted to working on problem sets. Problem sets comprise individual problems organized around related content. We summed the number of problems that students attempted across the school year. For each site (with the exception of Site 2 in SY 2012-13 where Khan Academy was used as the primary instructional resource in a self-directed model), Khan Academy was most often used to support students' practice of newly learned math skills by assigning students to complete the related problem sets. Of the time students spent on Khan Academy, more than 85% was allocated to working on the problem sets. The percent of time on Khan Academy spent working on problem sets ranged from a low of 70% in Site 2 to 99% in Site 4, both in SY 2012-13. The remainder of time on Khan Academy was spent viewing videos. The median number of problems attempted by site ranged from a low of 364 across Site 1 in SY 2012-13 (about 10 problems attempted per student per week across the district) to 4,448 in Site 9 (or 124 per week).

We also examined the proportion of Khan Academy content that students were exposed to that was below their grade level. As shown in Figure 3, there was considerable time spent on below-grade-level content.

Several factors help explain this pattern. In the first year of implementation, each school, regardless of grade levels served, began the school year by having

Figure 3. Median Percentage of Time Students Spent on Khan Academy Problem Sets Below, At, or Above Grade Level in School Years 2011-12 and 2012-13



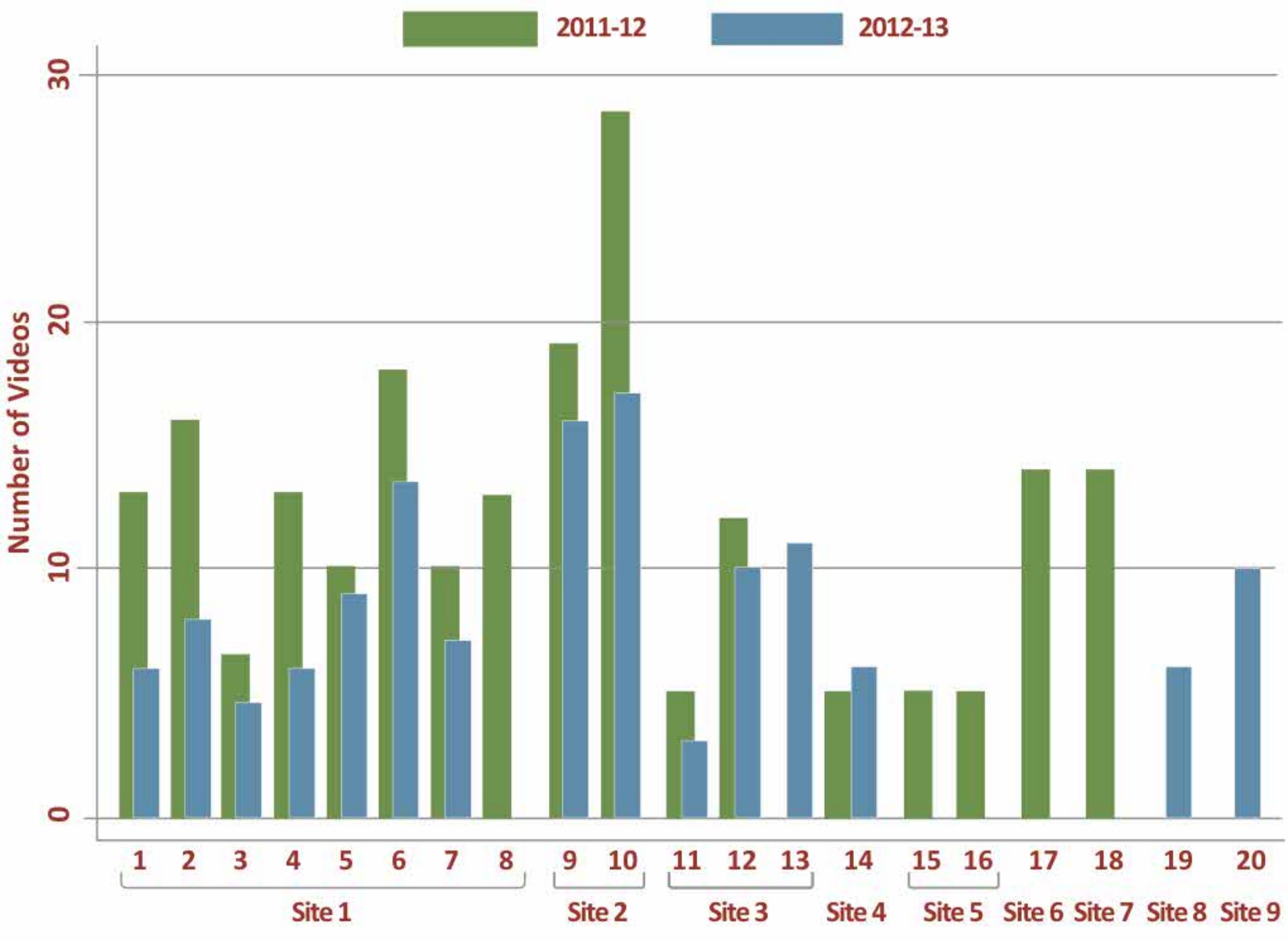
Note: % Below, At, and Above represent the median values for three separate distributions. For Site 1-4, SY 2011-12 data is shown in the first column and SY 2012-13 data in the second column.

students explore the Khan Academy resources. Students started with the least difficult content and then worked their way through to more challenging content. We also expected to find variation in the grade level of Khan Academy content used, based on the types of students who were targeted to use Khan Academy. In some schools, Khan Academy was used as an intervention to help strengthen the basic skills of struggling math learners. In those schools, we expected to see significant time spent on below-grade-level content. Figure 3 shows that at seven of the nine pilot sites, students spent the majority of their time working on Khan Academy problems whose content was below their grade level.

In contrast, students in Schools 1–7 in Site 1, Site 4, and School 16 in Site 5 spent more than 30% of their total time on Khan Academy on above-grade-level problem sets. For those schools, this difference was most likely explained by the combination of (1) students being encouraged by teachers to explore advanced content with Khan Academy at school and at home, and (2) the use of a core curriculum that challenged students with content that exceeded the state's grade-level standards (especially at Site 1).

Students did not rely on the Khan Academy videos as a significant source of instruction. Median student use of videos across a study year ranged from a low of 3 videos for Site 3, School 11 in SY 2012-13 to a high of 29 videos for Site 2, School 10 in SY 2011-12 (See Figure 4). It should be noted that students were counted as having watched a video if they started playing it, regardless of whether or not they watched it

Figure 4. Median Number of Khan Academy Videos Viewed by Site and School, SY 2011-12 and SY 2012-13



in its entirety. Neither of Sites 8 and 9, which were new to the research in SY 2012-13, provided students with headphones, thereby reducing the opportunity for the videos to be a source of instruction and support.

From information collected during interviews with teachers and students, from surveys, and from our observations, we identified several factors that most likely contributed to teachers' limited use of videos:

- Teacher-led instruction was the dominant strategy for the introduction of new concepts across the research sites, with Khan Academy used primarily as a supplementary instructional resource. More than half the teachers in SY 2011-12 and nearly three-quarters in SY 2012-13 reported on the survey that they rarely or never used Khan Academy videos to support their instruction; only one in five teachers reported doing so at least weekly. Nevertheless, teachers saw the videos as useful. Half the teachers reported in the survey that the videos were useful for reteaching and reinforcing students' understandings, and slightly more than half reported that they were useful for presenting an approach that differed from the one they themselves provided in the classroom. A little less than 3 in 10 teachers reported that the videos were *always* or *mostly* useful for introducing new concepts.

  One middle school teacher in Site 4 described her perspective on use of the Khan Academy videos in her classroom this way:

  The videos aren't as big of a part [of instruction] as they could be. I am not ready to give up that control. Kids like to get the interaction with me. Sal is great at explaining things, but you can't stop and ask questions, which is something these kids thrive on.

- Students struggling with a problem generally turned to their teachers or peers or used the hints and step-by-step features in Khan Academy rather than viewing or reviewing the related video.
- Few teachers reported that they considered the content of the videos to be well aligned with their curriculum. Fewer than one in five teachers reported that it was always or mostly true that the videos were aligned with their curriculum and that each topic they covered in class had a corresponding video. As described above, Khan Academy continues to develop videos to fill in gaps in its coverage of the K-12 Common Core State Standards for math.

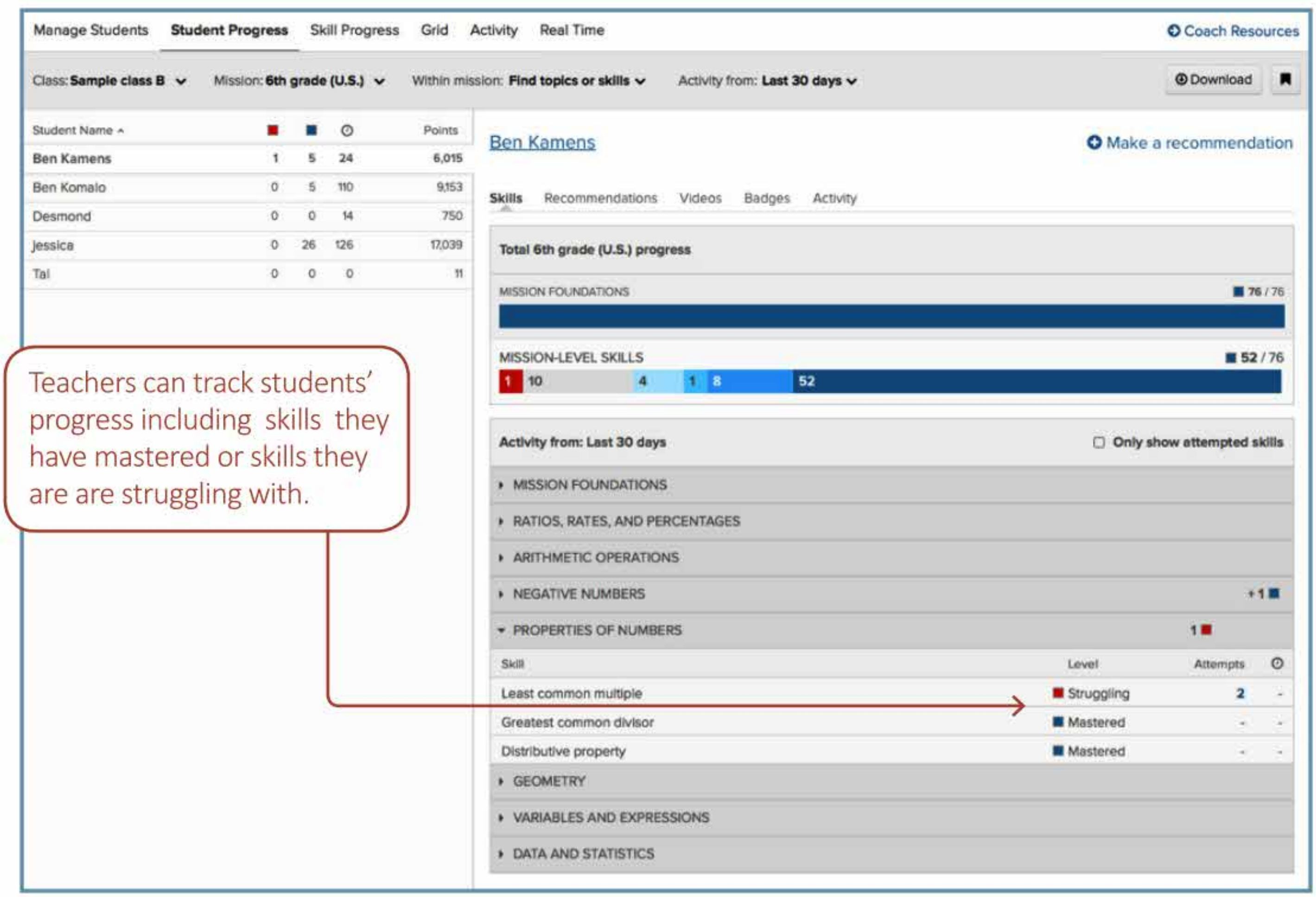
Few teachers expected their students to use Khan Academy outside the regular school day. Students' use of Khan Academy happened primarily during the regular school day, 8 a.m. to 3 p.m. For the median student, use outside of school ranged from a low of a few minutes a week across several schools in the sample to a high of 25 minutes per week for Site 8. Across the two years of the study, about 1 in 5 teachers participating in the survey reported that they assigned Khan Academy work to be completed outside the regular school day (18%), whereas 45% of teachers reported never assigning it for homework at all. Teachers who reported that they never assigned Khan Academy videos or problem sets for homework often cited concerns about student access to computers or reliable Internet connections at home (about 50% of those teachers). Student self-reports of their access to computers and the Internet in the home varied by school, with reports ranging from 67% in Site 4 to 93% in Site 8.

However, in three of the pilot sites with schools in low-income communities—Site 2 (in SY 2011-12), Site 3, and Site 8—the expectation was different. In those schools, students were expected to do whatever it took to complete any Khan Academy work they did not finish in class, including staying after school to use the school computers or using computers at home or in public libraries. One of the Site 3 schools even assigned Khan Academy problem sets during the school's winter and spring breaks. Students in this school who did not have access to the Internet at home could complete the assignment before the start of the school break by staying after school and using the school's computers and Internet access.

Teachers who reviewed the Khan Academy reports regularly found them useful. Across the 2 years of the study, slightly more than half the teachers reported reviewing the Khan Academy student performance data at least once a week (See Figure 5 for an example of a report). About 4 in 10 teachers reported that they reviewed a Khan Academy report of student progress once a month or less or not at all (29% in SY 2011-12 and 59% in SY 2012-13). Among the teachers who reviewed the data once a month or less or did not review the data, about 70% reported that they did not review the reports more often because they relied more on information outside the system, such as their own observations and formative assessments, to gauge student progress.

Of the teachers who reviewed the data at least a few times a month or more often, slightly more than half (53% in SY 2011-12 and 50% in SY 2012-13) regarded the data as very useful in informing their instruction, and the others (47% in SY 2011-12 and 50% in SY 2012-13) found the student reports somewhat useful. In SY 2011-12, teachers in Site 2 reported (1) using the reports to identify students struggling with the same concepts and assign them to small group instruction, and (2) as an "accountability" tool to identify students who were not making adequate weekly progress within Khan Academy and thus were candidates for an afterschool program. One seventh-grade teacher in Site 3 reported that she reviewed student reports four to five times per week to monitor students' progress on their Khan Academy work in and outside school, helping her keep apprised of students' learning needs more consistently than she could have otherwise. This review was particularly useful, according to the teacher, for those students who did not participate in discussion in the regular classroom but who worked on Khan Academy outside school.

Figure 5. An Example of a Teacher's Dashboard and Report



A ninth-grade teacher in Site 2 reported during SY 2011-12 that one of the most "powerful" aspects of Khan Academy was that students could use the features of the site to monitor their progress and to prove to themselves (not the teacher) what they knew and where they needed more work. The teacher commented that this was a more "authentic" form of assessment in that the students were evaluating their own skills and knowledge rather looking to the teacher to judge their performance.

Through out the study, Khan Academy conducted surveys, focus groups, and one-on-one discussions with teachers to understand how they thought Khan Academy reports could be made more useful, and Khan Academy implemented several changes in response to that feedback. One important change enabled teachers to filter reports by topic and skill so that they could more easily identify students' progress relative to the curriculum.

Factors Influencing Use

The cost-free nature of Khan Academy resources was an important factor in the decision of districts and schools to pilot it. Although many aspects of Khan Academy appealed to district, CMO, and school leaders, economy was a significant driver. Given restricted education budgets, education leaders were seeking cost-effective online instructional resources to implement their instructional visions. Administrators in three sites acknowledged that Khan Academy's no-cost status influenced their decision to pilot it. Leaders of two of the participating CMOs commented that constraints on their discretionary budgets made them unwilling to risk significant investments in online instructional programs, especially untested ones, even though they had recently made substantial investments in computer hardware and in improvements to Internet connectivity.

As one district administrator commented:

> *Free software is a great thing, especially when it's also useful and effective.*

Lack of access to anytime one-to-one computing limited teachers' use of Khan Academy in SY 2011-12. Few classrooms in our study had daily access to one-to-one computing (a computer for every student) in SY 2011-12. Teachers in schools with access to anytime one-to-one computing in the classroom were able to have their students use Khan Academy much more extensively and more flexibly to support instruction than were teachers in schools with high student-to-computer ratios. Of the 94% of teachers in the sample whose students used Khan Academy primarily in the classroom, only one-third in SY 2011-12 indicated that they had access to enough computers for all students to use whenever they wanted. Almost half the teachers reported that lack of computers negatively affected their ability to use Khan Academy. Many teachers in Site 1 shared laptop carts with other teachers in the grade level or across the school and therefore had access to computers for only a few days each week. The sixth-grade teacher in Site 7 had access to a laptop cart only once a week. Consequently, regardless of their preferences, in SY 2011-12 teachers in these schools were limited to using Khan Academy as a supplement to their core construction—for practice, review, remediation, and acceleration—rather than as an integral part of the core curriculum.

In contrast, in SY 2012-13, almost all classrooms (83%) had access to anytime one-to-one computing. The main reason for this change was an investment by Site 1, which constituted by far the largest set of classrooms in the study, to provide almost universal access to one-to-computing in that school year.

Extended instructional time facilitated teachers' use of Khan Academy. Teachers with extra or extended time dedicated to math instruction (more than 50 minutes per day) had more opportunities to integrate Khan Academy into their core instructional time than did other teachers. Sites 2, 3, 4, and 9 dedicated 90 minutes or more to daily math instruction, and Site 8 allocated more than 80 minutes to math instruction in grade 9. Schools associated with the other four sites allocated 60 minutes or less a day. On the teacher survey, in SY 2011-12 two-thirds of teachers and just over one-third (36%) in SY 2012-13 cited a lack of daily instructional time as a key factor having a moderate or significant impact on their ability to use Khan Academy effectively. According to two middle school teachers in Site 1, the greatest challenge they faced in using Khan Academy in SY 2011-12 was finding the time to fit it into their 50-minute daily math block; competing demands, particularly during the spring when the pressures of testing and trying to finish class projects squeezed Khan Academy out of their daily schedules.

Lack of alignment of Khan Academy content with core curriculum posed challenges for teachers' efforts to integrate it into the classroom. Given formal school curriculum, content gaps existed in both the videos and the problem sets during the first year of the study and, albeit to a lesser extent, during the second year as well. During the study years, Khan Academy developed a considerable amount of new content to fill the gaps. Our interviews revealed that teachers of fifth- and sixth-graders in the participating schools often found problem sets too difficult because they assumed a working knowledge of skills and concepts not yet covered in the school's core curriculum. In addition, significant gaps existed in Khan Academy content for ninth grade and after, particularly in geometry. Two-thirds of teachers surveyed across study years reported that a lack of alignment between the Khan Academy resources and their school's curriculum had a moderate to significant negative impact on their ability to use Khan Academy effectively with their students. Instructional coaches interviewed in spring 2013 from Site 1 also indicated teachers' difficulty in integrating Khan Academy into the curriculum because its content did not specifically address curriculum needs. As a result, the Khan Academy content was not always "synchronized" with the curriculum and therefore required teacher time and effort to determine which problem sets and videos were appropriate for their lessons.

According to one coach,

> *Teachers want a synchronized system that works with their curriculum. They don't know how to adapt the tool [Khan Academy] when there isn't …. matching between their curriculum and Khan Academy [problem sets and videos].*

Interview comments from a fifth-grade teacher in the district echoed those sentiments:

> *I just don't have time to comb through all of those modules and exercises and videos to be sure if they're right for the kids and what I'm teaching. I might as well just create the lessons using the materials I know and have access to.*

Several times over the course of the study, Khan Academy responded to teachers' requests to create problem sets that were developmentally appropriate for younger students, and the Academy continues to work on providing comprehensive coverage of Common Core State Standards in math from kindergarten through high school. In addition, Khan Academy's recent development of "tutorials" and grade-level "missions" should help teachers more easily locate the content on the site that is most appropriate for their students.

Preliminary Findings on the Connection Between Khan Academy Use and Improved Teacher Practices and Student Outcomes

This section presents preliminary findings about the potential benefits of Khan Academy for supporting teachers' classroom instruction and student learning. First we report on findings based on our observations in classrooms, interviews with teachers and students, and teacher and student self-reports collected through our surveys. The section ends with a set of findings based on the results of an exploratory analysis examining the association between the level of Khan Academy use and student outcomes in a subsample of classrooms.

Benefits of Khan Academy Use for Teaching and Learning

Students' engagement level was generally high during Khan Academy sessions. A high level of engagement was evident during a majority of our classroom observations for all grade levels. In focus groups with students in the lower grade levels, they often commented that they enjoyed their "Khan time," and the teachers we interviewed and surveyed confirmed that attitude. In SY 2012-13, 8 in 10 teachers surveyed reported that students liked the time they spent working on Khan Academy and, across all grade levels, that students were moderately (62%) or highly (25%) engaged when using Khan Academy. Overall, over the 2 years of the study 71% of students reported that they enjoyed using Khan Academy during the study period.

The following are possible, but as yet untested, explanations for this high level of engagement and are based on our observations and insights gathered during interviews with students and teachers:

- Students clearly enjoyed interacting with the technology (e.g., laptops, notebooks, iPads). Several teachers commented that their students looked forward to their regular "Khan time" sessions, particularly in the first part of the school year when the use of Khan Academy and technology was novel. In addition, several teachers noted that students (as well as these teachers) appreciated the break in routine from teacher-led instructional activities that technology use in the classroom afforded. This desire to introduce variety in instructional approaches appeared to be particularly strong in schools with extended class periods for math.

- Some students appear to have been motivated by Khan Academy's gamelike elements—the badges and energy points awarded when they successfully completed problem sets. Close to 4 in 10 students reported that the accumulation of badges and points motivated them to learn more in math or were what they liked most about Khan Academy. Across the 2 years of the study, 53% of students reported it was always or mostly true that the badges and points made them want to work harder in Khan Academy.

  However, some evidence suggests that the importance of the gamelike elements as a motivating tool may vary by grade level. For example, in SY 2012-13, badges and points appeared to play a more central role in the Khan Academy experience of students in grades 5 through 8 than for high school students in the sample (grades 9 and 10). More than half of the fifth- through eighth-graders (56%) indicated that accumulating badges and energy points spurred them to work harder in Khan Academy (*always* or *mostly true*), relative to 28% of high school students (38% in Site 8 and 24% in Site 2).

- Immediate feedback, hints, and access to videos meant that, when struggling with a particular problem in Khan Academy, students were not stuck for long and could experience success even when the content became challenging. Across the 2 years of the study, 32% of students agreed they liked math more since they started using Khan Academy. Additionally, 45% of students indicated they were able to learn new things about math on their own, without the help of their teacher. And 34% of high school students and 22% of students in grades 5 to 8 surveyed in SY2012-13 reported that they receive more information about what they did right or wrong when working on Khan Academy problem sets than they typically receive from their teacher on in-class practice problems or homework.

- In some cases, Khan Academy may have instilled in students a sense of ownership and control over the learning environment that is rare in traditional classroom settings. Of the teachers surveyed, 8 in 10 agreed that Khan Academy helped students take ownership of their learning. Student-driven activities embedded in the Khan Academy experience—goal setting, searching for content, self-monitoring of progress toward goals, and choice over the tutorial mode to use (hints, step-by-step, videos, etc.)—enhanced that sense. According to one sixth-grade teacher with students who were several grade levels behind their peers, the sense of ownership that developed led to the establishment of a "learning community" in his classroom; students proactively began to seek out the teacher and peers to help them when they were struggling with a Khan Academy problem set, something he had not experienced before with this group of students. Another middle school teacher in Site 4 observed that the ability to self-monitor through Khan Academy made students more aware of their strengths and weaknesses, which motivated them to work on gaps in their knowledge without her additional prompting.

Peer learning is emerging as a key component of the use of Khan Academy in some classrooms. Only the model adopted by teachers at Site 4 had peer learning—students helping students achieve their goals—at its core; however, several other teachers commented on the peer learning that had developed in their classrooms as a result of allowing students to both work independently and assist their peers as they worked through the Khan Academy problem sets. Several Site 1 teachers reported positive experiences with Khan Academy-related peer learning in their classroom and that as a result they would look for other opportunities to use peer learning in their instruction. Even for Site 2's student-centered, competency-based model implemented during SY 2012-13, students were allowed to work together in groups of their choosing, and students naturally turned to each other for support while working through their playlists, seeking out peers who were working on similar topics or who had already mastered those topics.

The sixth-grade teacher in Site 4 described the school's philosophy of creating an environment for peer learning:

> *We spend most of the beginning of the year establishing community among students and a safe environment. [You] first need to meet basic needs, then emotional safety, and only after that can you teach and learn. [I] want my room to be a place where they can make mistakes and still be accepted. [This is] one of the reasons Khan Academy works in the classroom. Students have to feel safe enough to ask for help and not be embarrassed. They'll spend their own Khan Academy time helping another kid. They'll celebrate each other's success. They love helping each other. There's power to that. Some teachers hesitate to give up that sense of control. ... Nobody's in one exact place, but each kid knows where they are and what their goal is.*

Teachers' perceptions of Khan Academy's impacts on students varied across different learning areas, with the strongest impacts reported to be students' overall understanding of math topics, students' ability to work and learn independently, and students' acquisition of procedural skills. In responding to SRI's teacher survey, over the 2 years of the study, roughly 85% of teachers reported that they believed Khan Academy had made a positive impact (somewhat or strong) on students' learning and understanding of the material overall, with 37% reporting a strong impact. Of the 87% of teachers who believed Khan Academy had a positive impact on students' ability to work and learn independently, 38% reported a strong impact. In terms of specific skills or areas, more than 8 in 10 of the surveyed teachers (83%) felt that Khan Academy had a positive impact (somewhat or strong) on students' acquisition of procedural skills (with 50% reporting a strong impact). A strong majority of teachers (80%) also believed Khan Academy had a positive impact on students' conceptual math understanding (with 24% describing it as a strong impact). Teachers credited Khan Academy with enabling students to learn new math concepts beyond their grade level (91% overall, with 41% reporting a strong impact). Close to 60% of the surveyed teachers believed that Khan Academy had a positive impact on their students' problem-solving skills and ability to apply mathematics in context, with 1 in 10 reporting a strong impact in these two areas.

Teachers in Site 1 differed from teachers in the other schools in their perceptions of Khan Academy's impacts. Students at Site 1 were academically and economically advantaged relative to students at the other study sites. The Site 1 schools had some of the highest test scores in the state, even when compared with other advantaged districts. Clearly, the academic needs of the Site 1 students were different from those of students in most of the other research sites that had much higher percentages of students who had gaps in basic skills and were performing below grade level (sometimes as much as 2 to 3 grade levels below). It is thus highly likely that the Site 1 teachers and the teachers in the other schools had different expectations for the role that Khan Academy might play in supporting students' learning. Many teachers in Site 1 focused on using Khan Academy to provide variety in their instruction and to allow students to explore a self-directed learning environment. For the average Site 1 teacher, Khan Academy use was also less systematic and intense compared with how many of the other schools used the Academy, particularly in SY 2012-13. A majority of teachers in the other schools relied heavily on Khan Academy to close existing knowledge gaps and provide meaningful practice opportunities two or more times per week.

Table 5 summarizes the largest differences between Site 1 teacher perceptions of the impacts of Khan Academy on student learning and those of other teachers in the sample. To highlight the differences, we report the percent of teachers reporting *no impact* and the percent reporting *strong impact* for each of the areas. Teachers at the other sites clearly perceived that their use of Khan Academy during SY 2012-13 had a more pronounced positive effect on their students' learning and learning skills than did the Site 1 teachers who worked with more academically advanced students.

Teachers who integrated Khan Academy into their instruction reported it had increased their capacity to support their students in a number of areas. Across the two years of the study, the majority of teachers indicated that using Khan Academy increased their ability to provide students with opportunities to practice new concepts and skills they had recently learned in class (91% overall; 100% in SY 2011-12 and 81% in SY 2012-13). Eight in ten teachers also reported that Khan Academy increased their ability to monitor students' knowledge and ability (81% overall; 86% in SY 2011-12 and 75% in SY 2012-13), thus helping to identify students who were struggling. Among teacher survey respondents, 82% (90% in SY 2011-12 and 73% in SY 2012-13) reported that Khan Academy helped them identify students who were ahead of the rest of the class, 82% said it helped them expose advanced students to concepts beyond their grade level (90% in SY 2011-12 and 73% in SY 2012-13), and 65%, including 72% of teachers in schools serving low-income communities, said that Khan Academy increased their ability to help struggling students to catch up. Slightly more than half the teachers reported that using Khan Academy helped them determine what content they needed to reteach or could skip (56% overall; 61% in SY 2011-12 and 52% in SY 2012-13), and 32% of teachers overall and 48% of teachers in schools serving low-income communities reported that Khan Academy helped them move more quickly through the curriculum.

Again, we found some differences between Site 1 teachers and teachers at other sites in their reports of the extent that using Khan Academy affected their instructional practice and capacity. Table 6 shows those aspects of teacher practices that exhibited the greatest differences in teacher reports for SY 2012-13. As mentioned above, differences in academic needs of the Site 1 students relative to students in the other sites, and the typical role Khan Academy played in

Table 5. Major Differences in Teacher Reports of the Impact of Khan Academy Use on Student Learning: Site 1 Teachers versus Other Sites' Teachers (SY 2012-13)

In your opinion, how has Khan Academy impacted your students' learning?	No Impact		Strong Impact	
	Site 1	Other Sites	Site 1	Other Sites
Overall, students' learning and understanding of the material	21%	0%	15%	60%
Students' procedural skills	18%	0%	27%	75%
Students' problem-solving skills	40%	15%	3%	20%
Students' learning of new concepts in mathematics that are beyond their grade level	6%	15%	24%	40%
Students' motivation to learn mathematics	39%	15%	18%	35%
Students' ability to work and learn independently	15%	5%	27%	55%

Table 6. Major Differences Noted in Teacher Reports of the Impact of Khan Academy on Teacher Practices: Site 1 versus Teachers at Other Sites (SY 2012-13)

Khan Academy had an impact on my instructional practice in the following ways...	Agree or Strongly Agree	
	Site 1	Other Sites
Increased my ability to monitor the effectiveness of my own instruction	33%	60%
Increased the pace at which I moved through the curriculum	15%	53%
Increased my ability to help students who are below grade level catch up to the their peers	52%	80%

Site 1 classrooms compared to classrooms in the other sites, may explain some of the differences between Site 1 and other teachers in their perceptions of the value of Khan Academy. Whatever the reason, teachers in sites other than Site 1 clearly found greater value in their use of Khan Academy to support their overall instruction.

When teachers were asked in the survey about the relative benefits of Khan Academy for students with different levels of prior academic performance, teachers' perceptions of Khan Academy's effectiveness varied. (See Table 7.) Across the two years of the study, a majority of teachers reported that they believed Khan Academy was at least somewhat effective for students of all math ability levels. However, teachers described Khan Academy as most effective in meeting the learning needs of students whose academic work was ahead of most students their age, with 74% of teachers indicating the program was very effective for this group and an additional 21% reporting it was somewhat effective. In contrast, 43% of the teachers rated Khan Academy as very effective in meeting the learning needs of students whose academic work was at the expected level for their age, with another 49% rating it as somewhat effective. Just 25% of teachers reported that Khan Academy was very effective for students whose academic work was behind that of most students their age, with an additional 47% reporting it as somewhat effective. These trends in teacher perceptions were consistent across study year and between Site 1 and the sites serving low-income communities.

The experience of a Site 5 fifth-grade teacher using Khan Academy provides some insight into possible factors behind teachers' reports of the relative effectiveness of Khan Academy for different types of students. She used Khan Academy during a dedicated 30-minute session 3 days per week that was separate from the daily 45-minute math instructional block. In our interview with this teacher in SY 2011-12, she observed that students in her classroom above and at grade level benefited more from Khan Academy than did their lower performing peers. The teacher described a small group of accelerated learners in her class that had "taken off" and who worked on content within Khan Academy that went well beyond the fifth-grade curriculum. The teacher reported that these students were those who typically set goals for problem sets to complete in Khan Academy, took notes while viewing videos, and tended to engage in conversations about math with their peers as they worked through the Khan Academy problem sets. Although working with these students on the advanced content they were covering in Khan Academy was not possible during regular

Table 7. Teacher Reports of the Effectiveness of Khan Academy Use For Students of Different Math Abilities (Average across SY 2011-12 and SY 2012-13)

In your opinion, how effective is Khan Academy at meeting the learning needs of the following types of students?	Very Effective	Somewhat Effective
Students whose academic work is ahead of most students their age	74%	21%
Students whose academic work is at the expected level for their age	43%	49%
Students whose academic work is behind most students their age	25%	47%

instruction time, she did monitor their progress by reviewing Academy reports and suggested new topics to work on to help prepare them for the sixth-grade curriculum. The teacher also described how students performing at grade level benefited from Khan Academy through additional opportunities to (1) practice skills recently taught by the teacher, (2) work on below-grade level content as needed to overcome weaknesses in foundation skills, and (3) receive immediate feedback on their work, which helped them learn from their mistakes. In contrast, the teacher also reported that the lowest performing students (about 15 to 20% of her class) did not benefit as much from Khan Academy as did the other students. (The teacher had initially hoped that dedicated practice time on Khan Academy would help those students catch up to their grade-level peers). She observed that the same students who struggled in her classroom before the introduction of Khan Academy also struggled to make progress in Khan Academy. She indicated that those students, some with diagnosed learning needs, were less engaged and less productive with their time on Khan Academy.

A majority of teachers were happy with their Khan Academy experience and planned to use it Academy with their students in the upcoming school year. Eighty-six percent of teachers reported that they would recommend Khan Academy to other teachers, and 89% planned to use Khan Academy during the next school year.

A significant portion of students, but less than the majority, reported that Khan Academy had a positive effect on their math learning and feelings about doing math. Across the 2 study years, slightly more than forty-percent of students in our survey reported that Khan Academy helped them learn new math concepts on their own without the help of their teacher and increased their understanding of math. About 1 in 3 students reported that they had more confidence in their ability to do math, and they liked math more since they started using Khan Academy.

Examining the Link between Khan Academy Use and Student Outcomes

This section examines the degree to which time spent on Khan Academy and the number of problem sets a student completed were related to student performance on the state's standardized math assessment (CST) and nonachievement outcomes such as students' interest in math and the level of anxiety experienced when doing math. For methodological reasons, we conducted the analyses using a subsample of the total classrooms that participated in the overall research. The analytical models used examine the *correlation* between a student's level of Khan Academy use and various student outcomes (for details about these analyses see Appendix D). Although these models can help us examine the relationship between use and outcomes they cannot be used to establish with any level of confidence whether the use of Khan Academy caused better student outcomes. There are multiple plausible explanations for any of the reported associations. As a result, the findings presented in this section should be treated as exploratory and not be used to support definitive claims about the effectiveness of the Khan Academy resources. Instead, they should suggest possible areas of future research where more rigorous designs would be used to help establish the causal direction between Khan Academy use and student outcomes.

Analysis of the relationship between use and student learning. For Site 1 in SY 2011-12 and Site 9 in SY 2012-13, we used a combination of approaches to explore the relationships between Khan Academy use and student learning outcomes. In general, these strategies helped account for the role of students' prior achievement in their use of Khan Academy and to improve the overall interpretability of results. Students' prior achievement on state tests was an important consideration because it not only predicted later achievement, but also predicted the amount of time that students spent on Khan Academy and the number of problem sets they completed to "proficiency".[11] For these analyses, we used a two-step process. First, we estimated the relationship between students' fall and spring test scores, categorizing students on the basis of whether their spring test scores were higher or lower than predicted, given their fall test scores. Second, we compared the average number of minutes spent on Khan Academy and the problem sets completed for the two groups to determine whether students who spent more time on Khan Academy or showed greater progress on problem sets were more likely than other students to have better than expected spring achievement scores. Table 8 shows the results of these analyses for Site 1, and Table 9 presents them for Site 9, based on performance on the spring state achievement test.

A positive association was found between more Khan Academy use and progress and improvements in student test scores. For fifth and sixth graders in Site 1, we found a positive and statistically significant relationship between both minutes spent and the number of problem sets completed in Khan Academy, and better than predicted CST scores (Table 8). Compared with students whose spring test scores were lower than predicted, students with better than predicted CST scores averaged about 732 more minutes (more than 12 hours) on Khan Academy in grade 5 and 166 more minutes in grade 6 (approximately 3 hours), and they completed 26 additional problem sets in grade 5 (approximately 39% more) and 20 additional problem sets in grade 6 (approximately 22% more).

For Site 9 (Table 9), we found a statistically significant relationship between time on Khan Academy in seventh grade and higher than predicted achievement scores and a strong trend in eighth grade in the same direction. Note, however, that that trend was not statistically significant (partly due to the limited sample size and the smaller difference between the two groups). Seventh-grade students with higher than predicted test scores logged approximately 7 hours and 28 minutes more on Khan Academy across the school year than other seventh graders. Eighth graders who scored higher than predicted on the spring CST spent an average of 4 hours and 49 minutes more on Khan Academy.

For Site 9 we also found a positive association between higher than predicted spring test scores and the number of problem sets completed by students across all three grade levels, but the relationship was statistically significant for the sixth and eighth grade only. Sixth graders who had higher than predicted spring CST scores completed 25% more Khan Academy problem sets than their peers, and eighth graders who had higher than predicted spring scores completed 28% more problem sets than the other eighth graders.

[11] During the course of the study, a student was judged to be "proficient" on a specific math topic (e.g., adding fractions with mixed denominators) if the student answered a system-defined number of problems correctly in a row without making a mistake. At the start of the study, this number was fixed at 10 in a row. Later in the study Khan Academy implemented a machine-learning algorithm to help predict proficiency that allowed the proficiency requirement to vary, typically from 7 to 10 problems correct in a row.

Table 8. Use of Khan Academy at Site 1 by Lower than Predicted and Higher than Predicted Test Score Performance Groups (SY 2011-12)

	Lower than predicted		Higher than predicted		Percent Difference
	Mean	*SD*	Mean	*SD*	
Fifth grade					
Minutes***	**951**	767	**1,683**	2,042	+76%
Problem sets completed ***	**67**	39	**93**	48	+39%
Sixth grade					
Minutes**	**866**	654	**1,032**	698	+19%
Problem sets completed***	**93**	50	**113**	59	+22%

SD = standard deviation.

Sample sizes
FIfth grade: Lower than predicted group = 223 students; Higher than predicted group = 212 students.
Sixth grade: Lower than predicted group = 226 students; Higher than predicted group = 189 students.
**$p < .01$, ***$p < .001$

Table 9. Use of Khan Academy at Site 9 by Lower than Predicted and Higher than Predicted Test Score Performance Groups (SY 2012-13)

	Lower than predicted		Higher than predicted		Percent Difference
	Mean	*SD*	Mean	*SD*	
Sixth grade					
Minutes	**1657**	773	**1746**	657	+5%
Problem sets completed **	**65**	21	**82**	31	+26%
Seventh grade					
Minutes**	**2349**	719	**2797**	923	+19%
Problem sets completed	**104**	32	**114**	31	+10%
Eighth grade					
Khan Academy minutes	**1890**	985	**2179**	808	+15%
Problem sets completed*	**95**	41	**121**	47	+27%

SD = standard deviation.

Sample sizes
Sixth grade: Lower than predicted group = 44 students; Higher than predicted group = 47 students.
Seventh grade: Lower than predicted group = 52 students; Higher than predicted group = 48 students.
Eighth grade: Lower than predicted group = 25 students; Higher than predicted group = 26 students.
*$p < .05$, **$p < .01$

As mentioned above, these analyses are exploratory and warrant further investigation, and cannot be used to establish a causal connection between Khan Academy use and improved test scores. Multiple explanations for these associations are plausible in addition to the possibility of a causal link between Khan Academy use and better than predicted test performance. For example, students who scored higher than predicted on the spring test scores in Site 1 may have learned more from teacher-led instruction (which made up more than 90% of math instruction) than students who scored lower than predicted. That may then have translated into those students making more progress in Khan Academy as well as doing better on the spring test. In general, students who scored better than predicted on the spring assessment may have differed from students who did not do so in ways that are associated both with better test performance and with greater use of and more progress made in Khan Academy—characteristics such as persistence, motivation, focus, and interest in math.

Analysis of the relationship between use and nonachievement outcomes. The nonachievement outcomes examined have been shown in prior research to be strong predictors of students' performances in math (Ferla et al., 2009; Midgley et al., 2000). The scales included (1) academic efficacy, (2) math anxiety, (3) math interest, and (4) math self-concept. Appendix D provides further details on these measures and the analytical approach. For this exploration, we examined whether students who used Khan Academy more, experienced continuous success in solving problems, and who received immediate feedback as they successfully progressed through increasingly difficult math topics would, by the end of the school year, have a more positive view of themselves as someone who could be successful at math, have less anxiety about learning math, and perhaps even have a greater interest in math.

We examined the relationship between use of and progress in Khan Academy and self-reported nonachievement outcomes measured in the fall and spring on the student survey. We used the same overall analysis strategy as employed for our analysis of the relationship between students' performance on standardized achievement tests (CSTs) and their use of Khan Academy. After categorizing students according to whether their self-reported measures of a set of nonachievement outcomes were higher or lower than predicted given their self-reports on the fall survey, we examined the relationship between scoring higher or lower than predicted on those measures in the spring, and the total number of minutes spent on Khan Academy and the problems sets successfully completed. This analysis was restricted to fifth and sixth grade Site 1 classrooms in SY 2012-13.[12]

A positive association was found between more Khan Academy use and progress and improvements in three of the four self-reported nonachievement outcomes – math anxiety, math self-concept, and academic efficacy. Scoring more positively than expected on a self-reported measure of math anxiety, math self-concept, and academic efficacy was associated with students completing more problem sets to proficiency (Table 10). Students who successfully completed between 10% and 20% more problem sets than did other students reported lower than expected anxiety about doing math in the spring compared to their reports in the fall, higher than expected beliefs about their own math ability (math self-concept), and confidence in their ability to learn math even when concepts become difficult (academic efficacy). The same positive associations held for time spent working on Khan Academy but were only statistically significant for math self-concept and academic efficacy. Students in Site 1 who spent between an average of one and a half to three hours more on Khan Academy across SY 2012-13 had higher than expected self-reports of their math self-concept and academic efficacy.

[12] SY 2012-13 was the only study year for which the nonachievement outcome measures were collected. Site 9 was not included in this analysis because it administered the follow-up survey only to a select subgroup of students designated for summer school during 2013.

Although these findings linking Khan Academy use and better than expected nonachievement outcomes are encouraging, they are correlational in nature rather than proof of causal impact. Like the findings highlighting the link between improved achievement outcomes and Khan Academy use described above, these results for nonachievement outcomes should be the topic of future research using designs that are more appropriate for testing causal hypotheses.

Table 10. Use of Khan Academy at Site 1 by Lower than Predicted and Higher than Predicted Self-Reported Nonachievement Outcomes (SY 2012-13)

Fifth and sixth grade	Lower than predicted			Higher than predicted			Percent Difference
	Mean	*SD*	*N*	Mean	*SD*	*N*	
Math anxiety†							
Minutes	**812**	1374	442	**721**	1199	389	+11% ††
Problem sets completed **	**58**	40	438	**51**	38	388	+12% ††
Math self-concept							
Minutes*	**676**	1188	387	**851**	1378	444	+26%
Problem sets completed***	**51**	38	385	**58**	40	441	+14%
Math Interest							
Minutes	**776**	1507	394	**764**	1070	437	-2%
Problem sets completed	**52**	36	390	**57**	43	436	+10%
Academic Efficacy							
Minutes*	**718**	1116	396	**817**	1439	435	+14%
Problem sets completed***	**49**	34	394	**59**	43	432	+20%

† "Lower than predicted" in the spring = anxiety that was less in spring than expected on the basis of the fall self-report.
†† More time on Khan Academy and problem sets completed are associated with lower than predicted self-reported math anxiety levels in spring.
SD = Standard deviation.
N = Number of students.
* = $p < .05$, ** = $p < .01$, *** = $p < .001$

Summary and Implications

The Khan Academy pilot program showed that schools serving diverse student populations can make use of Khan Academy as part of their mathematics instruction and that they find value in doing so. In this section, we reflect on the broader implications of the findings presented above.

As a set of resources created for self-initiated, out-of-school learning, Khan Academy needed extensive redesign and additional content to make it better suited to sustained use in classrooms. When new educational technology garners a massive number of users or demonstrates spectacular success in its original field of use, it typically sparks enthusiasm among people in other fields for using it in new settings and for different purposes. We have seen this syndrome before in the enthusiasm for adopting popular multi-player online games for classroom use. Such technology transfer appeals to our desire for cost-efficient impact, but it is easy to underestimate the amount of work needed to make an instructional resource developed for one setting fully functional in another. The design of the Khan Academy school pilot program recognized the need to understand the ways in which teachers and students would use the website and the changes that would be required to make Khan Academy truly valuable for classroom use.

The Khan Academy school pilot program demonstrated that a lean technology startup can partner productively with schools to develop implementation models and product improvements. Khan Academy began the school pilot program with little idea about how teachers would actually use their website. Extensive discussions with teachers made the technology developers aware of functionalities that teachers needed in order to integrate Khan Academy resources into their instruction. Functions such as goal setting were irrelevant to Khan Academy's original design as a resource for learners choosing their own learning experiences but were extremely important to teachers responsible for getting their students proficient on specific grade-level curriculum standards.

Teachers like having a source of extensive, curated content but want to maintain control over students' use of that content. Given the increasing availability of free online instructional resources for all subject areas and the limited time teachers have to identify materials appropriate for their students, teachers want curated instructional content that is searchable by grade-level standards. Across the two years of the school pilot, Khan Academy put extensive effort into filling in content gaps with respect to the Common Core math standards, making their content searchable by grade-level standard, and organizing content in ways that made it easier to find content related to specific topics and grade levels. Khan Academy also learned that teachers wanted the ability to assign practice sets on the specific skills they were teaching to their students. This capability was added to Khan Academy in the second study year in response to teacher feedback.

Use of a personalized learning tool like Khan Academy does not mean that teachers relinquish their responsibility for leading instruction. In most classrooms in this study, Khan Academy was used as one component of a broader system of math curriculum and instruction rather than as the primary source of instruction. Teachers maintained control of what was taught and of the learning experiences provided for students, but the Khan Academy resources gave them the capability to have different students actively working on different skills and to have access to detailed information on each student's progress.

Schools and teachers adopting Khan Academy can benefit from detailed use cases, describing how Khan Academy can be implemented under different time and technology constraints and with different goals. This implementation report illustrates how factors such as the goal for using Khan Academy (e.g., to help a subset of students catch up versus to provide skills practice for all students), students' technology access, and the length of the math class period shape and constrain the way Khan Academy is used. Teachers have found ways to deal with some of these constraints through techniques such as the within-class rotation model and systems for peer coaching. Khan Academy offers a resource toolkit for teachers that includes: (1) a getting-started guide that introduces teachers to various features on the website; (2) teacher-developed curriculum guides, which show how Khan Academy can be integrated into lessons on various topics; and (3) video use cases that demonstrate how teachers in different schools are using Khan Academy for a range of different purposes and students.

Future evaluations of Khan Academy impacts will need to specify the kinds of students and outcomes being targeted, and the particular implementation model being studied. The ways in which Khan Academy is used vary markedly across different classrooms, reflecting differences in student characteristics such as grade level and prior achievement, and the goals for Khan Academy use. In most cases, Khan Academy will be part of a broader set of math instruction practices and curriculum resources, making it impossible to disentangle the value added by Khan Academy unless other features of the instructional system are equivalent for treatment and control groups. The most promising models for using Khan Academy should be studied at scale, using rigorous evaluation designs that control for these other aspects of curriculum and instruction, and employing randomized experimental designs when feasible.

Teachers implementing Khan Academy should support their students to develop the types of learning practices and habits they need to adopt to become effective independent learners. Little in students' prior schooling prepares them for the self-directed learning expected in Khan Academy and similar digital learning systems. Most students have been schooled in traditional classrooms where teachers are the primary source of instruction and where the teacher, guided by curriculum pacing guides, determines what, when, and how to study. The teacher also serves as students' primary source of help when they have questions or struggle to understand new concepts. Most students have become dependent on teachers and expect their instant support. Students being introduced to more self-directed uses of Khan Academy will need to be taught how to pick their learning activities judiciously, manage their own level of effort, and find help from resources other than the teacher, including Khan Academy's videos and the hints embedded in its problem sets. Khan Academy's goal setting and teacher recommendation features, student dashboard, and recent efforts to provide organized chunks of content in the form of "missions" are all attempts to help students focus on the specific content they need to master and self-direct their learning.

The impact of Khan Academy on social and emotional competencies (such as perseverance and motivation) and 21st century skills (such as self-direction and accountability) warrant future study. Observational evidence from this research suggests that the use of Khan Academy may have the potential to improve important nonachievement student outcomes, including attitudes and motivation toward math and taking responsibility for learning. A growing body of research is addressing the role of noncognitive factors in students' success in education (Dweck, Walton, & Cohen, 2011; Duckworth et al., 2011; Farrington et al., 2012), and specifically in online learning environments (Baker et al., 2010). Several research teams have developed and are testing programs and interventions designed to help students develop these characteristics; measure the characteristics in real-time, based on students' interaction with an online learning system; and provide feedback to teachers so they can intervene with individual students as needed. (For a summary of these programs, see Shechtman et al., 2012). Khan Academy would provide a suitable platform for this kind of research. In a related vein, future research could investigate the extent to which students' interactions with Khan Academy improve a set of key 21st century skills such as digital literacy, resourceful use of online learning resources and peer support, time management, and personal accountability. These skills are critical for success in higher education and in the working world. All of the sites that participated in this research were committed to exploring ways to redefine what it means to educate students by asking teachers to rethink their roles and by providing students with more personalized, engaging, and self-directed learning opportunities as a way to better prepare them for life after high school.

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Appendix A. Screenshots of Khan Academy Problem Sets, Reports, and Game Mechanics

Figure A1. Student Dashboard Showing What the Student has Mastered, Recommended Exercises

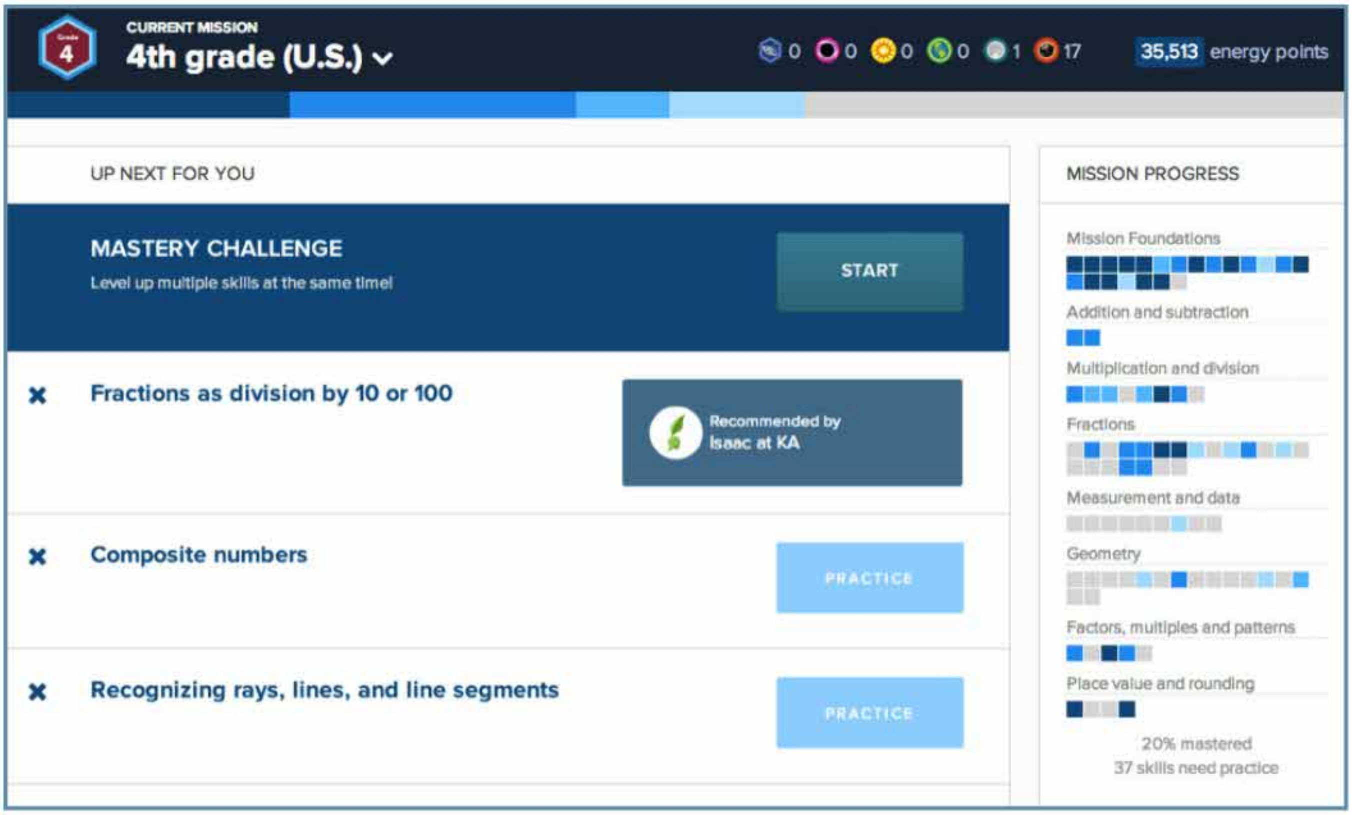


Figure A2. Student Page With Badges, and Points

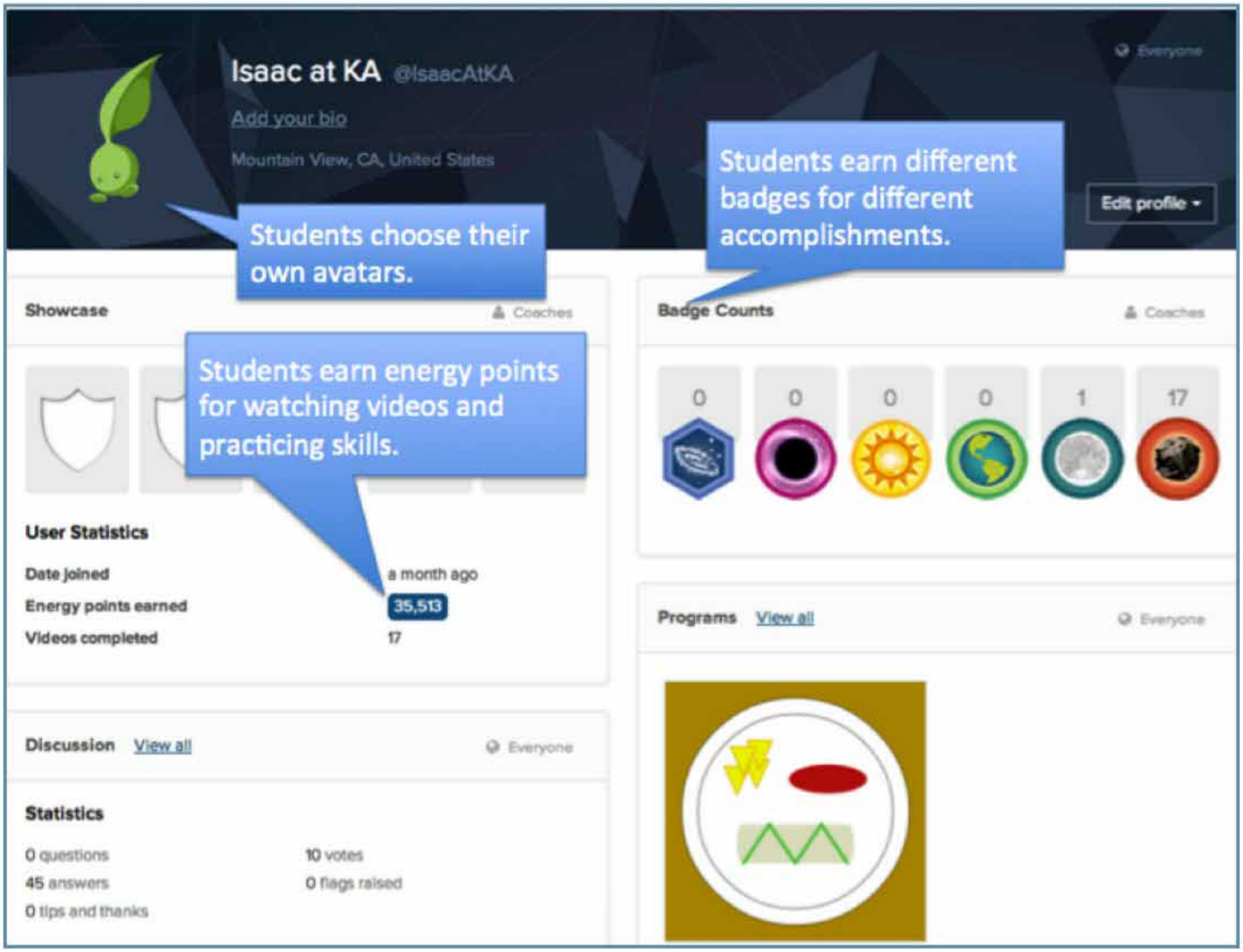
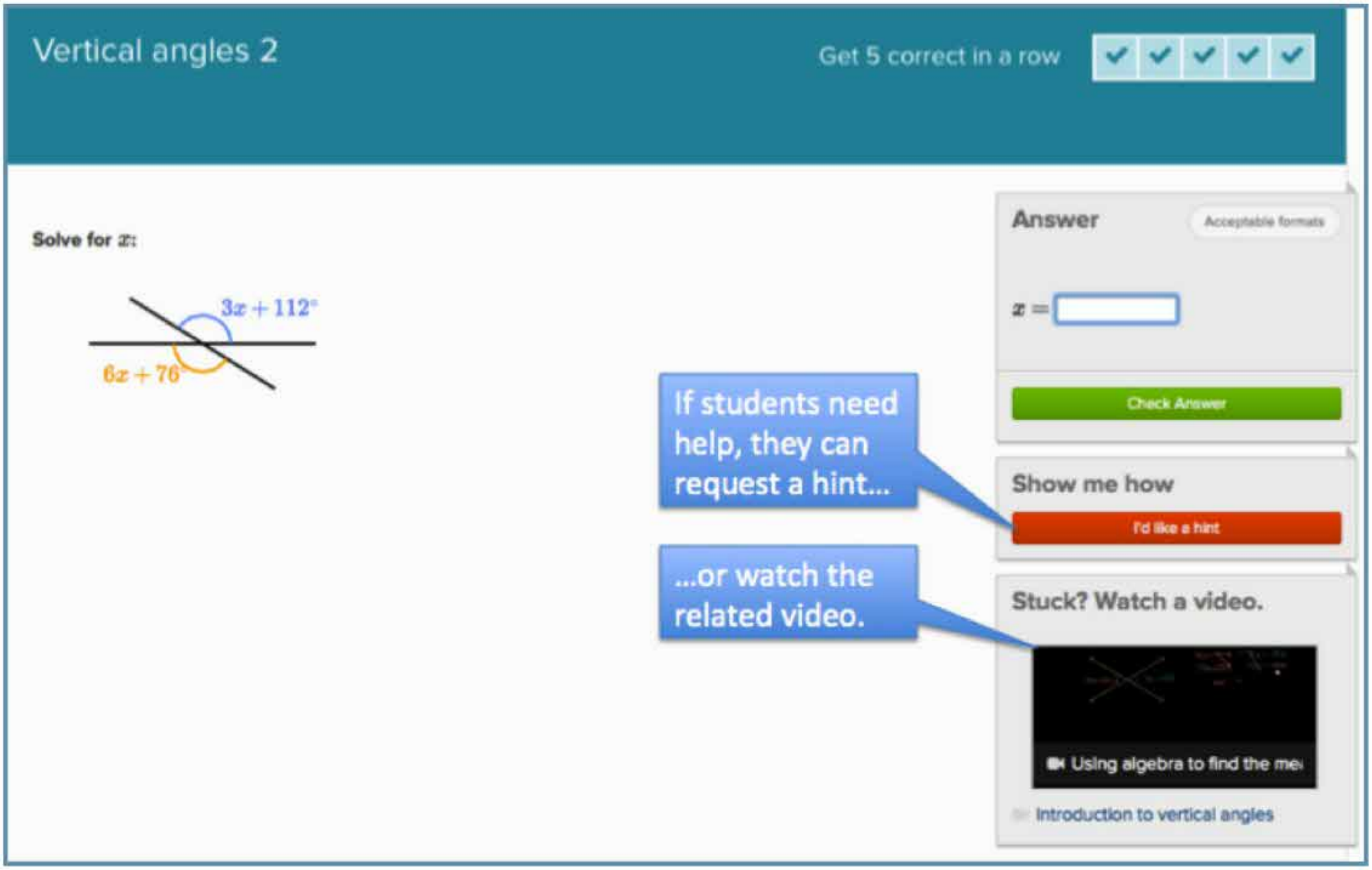


Figure A3. Student Problem View Showing a Math Problem



Appendix B. Research Sites Participating in the Implementation Research

Table B1. Research Sites in the 2011–12 Khan Academy Evaluation

Research site	Description
1	**Site (SY 2011-12; SY 2012-13)—**The high-achieving suburban school district serves a middle to upper middle class student population. **Schools and grades participating—**All fifth- and sixth-grade classrooms across seven elementary schools and in the seventh grade in one of the district's two middle schools participated. **Intent—**Piloting Khan Academy is part of district's broader vision of moving toward more student-centered teaching and more individualized learning while exposing students to 21st century learning opportunities. In addition, the district wanted to use Khan Academy to support struggling learners in one seventh-grade classroom. **Use model—**No single model was implemented; teachers had total discretion over how and when they used Khan Academy. For SY 2011-12, district leaders indicated that they expected teachers to try to use Khan Academy at least 45 minutes per week in their classrooms. No such expectations were communicated at the start of SY 2012-13. Most teachers assigned the Khan Academy problem sets as a supplemental practice session to core instruction. **Technology availability—**For SY 2011-12, laptop carts were shared with one or more teachers in the same grade level. Teachers in a few schools used Khan Academy in a computer lab. During SY 2012-13, almost all teachers had access to 1:1 computing in their classrooms.
2	**Site (SY 2011-12; SY 2012-13)—**The charter management organization (CMO) serves a diverse student population from the low-income neighborhoods surrounding the schools, as well as middle and upper middle class students seeking an alternative to their local public high school. **Schools and grades participating—**The two small high schools opened in SY 2011-12 and are collocated in an urban neighborhood. During SY 2011-12, the schools enrolled ninth-grade students only; they added a tenth-grade in SY 2012-13. **Intent—**In SY 2011-12, the original intent was to introduce a blended learning program for ninth-grade math instruction using Khan Academy to supplement the core classroom curriculum. The decision was motivated by the hope that Khan Academy could (1) help incoming students with low math achievement fill gaps in their basic skills that were a legacy of their primary school experience, and (2) create a more personalized learning experience for students to drive learning gains. By the start of SY 2012-13, the site decided to implement a completely self-paced competency-based instructional model to help prepare students for college better. **Use model—**During SY 2011-12, teachers integrated Khan Academy with their classroom instruction by assigning weekly goals for student completion of problem sets associated with the content standards being covered during whole-class instruction time and targeted in upcoming benchmark assessments. Students' completion of the problem sets was mandatory and contributed to their class grade. Khan Academy was used in the classroom up to 4 days per week for 45 minutes per day in addition to the regular 45 minutes of classroom instruction. During SY 2012-13, ninth and tenth graders assembled in a single large classroom for math instruction (200 students per class). Instruction was self-paced and guided by playlists that directed students to a set of digital resources to help them learn specific skills and concepts. Khan Academy was the primary instructional resource for most topics. Teachers were available to tutor students and also led whole-class instruction, conducted at a separate time. That instruction focused on helping students apply their independent learning to complex problems while practicing specific higher order skills called out in the Common Core standards. Whether they used Khan Academy or not was at the discretion of the students; no specific amount of time of for using the Academy or number of problem sets successfully completed were required. **Technology availability—**Enough laptops for one-to-one computing were available.

Table B1. Research Sites in the 2011–12 Khan Academy Evaluation (Continued)

Research site	Description
3	**Site (SY 2011-12; SY 2012-13)—**The students of this CMO, which operates high schools and middle schools (grades 5–8), are predominantly from underserved and economically marginal communities (more than 80% of students are eligible for the federally subsidized lunch program).
	Schools and grades participating—Khan Academy was used in four middle schools in select classrooms (only three of the schools were the focus of this research). School 1 piloted Khan Academy in two seventh-grade pre-algebra classrooms in SY 2011-12 and in one seventh-grade classroom in SY 2012-13. School 2 used it in SY 2011-12 in a self-contained intervention program for new sixth graders who entered the school well below grade level in math preparation; in SY 2012-13, the school extended the use of Khan Academy to all grades, with its predominant use in a computer lab. In School 3, one fifth-grade teacher used it in her classroom for the first time in SY 2012-13.
	Intent—The CMO's interest in blended learning and Khan Academy was motivated by three goals: personalizing student learning, enhancing teacher effectiveness, and exploring increased sustainability (serving more students at the same or lower cost). Among the immediate benefits it hoped to achieve from piloting Khan Academy were immediate feedback on students' math learning and increased student ownership of their learning.
	Use model—In School 1 Teachers students worked in class 1 to 3 days a week on Khan Academy problem sets on topics covered in the weekly lessons. Sessions on Khan Academy typically lasted 25–30 minutes of the 90-minute class period, following a whole class homework review and teacher lecture. In School 2 by the second semester of SY 2011-12, the sixth-grade teacher was using Khan Academy in an intervention program for up to 5 days a week for 45–60 minutes per day in addition to the 60 minutes of regular classroom instruction. The teacher initially assigned Khan Academy problem sets linked to the content standards being covered in the classroom; later students were allowed to select their goals on the basis of their individual needs and the topics covered during regular class time. In SY 2012-13, Khan Academy was used 2 days per week in an extra math period held in a computer lab overseen by a noncredentialed staff member. Students worked on Khan Academy problem sets for the duration of the period. At the start of the year the problems assigned were based on the topics students struggled with as indicated by a diagnostic assessment the instructor administered . Later in the first semester the lab instructor assigned problem sets that aligned with the topics covered in the students' weekly lessons in the classroom. For the second semester, after the instructor observed that students were struggling with the grade-level problem sets, she had students start with the most basic Khan Academy problem sets (i.e., basic arithmetic) and work their way up to grade level content, filling in gaps in prior years' learning. In School 3, students worked on Khan Academy problem sets in the classroom 1-2 days per week for 15 minutes per session to practice specific skills following teacher-led direct instruction on those skills. To use Khan Academy students first needed to pass an informal assessment on the skills covered during direct instruction. Students who did not pass the assessment received further instruction from the teacher.
	Technology availability—In school 1 the teacher had access to a cart of Chromebooks (26 computers for a class of 34 students) that was shared among three teachers. In school 2, for her 30 students, the teacher had access to eight desktop computers in her classroom, which she supplemented with laptops from the school's computer cart. In School 3's learning lab students had access to one-to-one computing with students working on desktop computers in rows of workstations.

Table B1. Research Sites in the 2011–12 Khan Academy Evaluation (Continued)

Research site	Description
4	**Site (SY 2011-12; SY 2012-13)**—The small independent school serves students in grades 6-12 who will be the first in their families to attend college.
	Schools and grades participating—During SY 2011-12, two middle school teachers, along with all students in grades 6–8 participated. During SY 2012-13, use of Khan Academy was focused primarily on the sixth-grade classroom.
	Intent—School leaders were initially attracted to Khan Academy as a set of resources to support the school's goal of getting all students "college ready."
	Use model—By spring 2012, middle school teachers had begun to develop lesson plans that integrated the use of Khan Academy as a practice activity into the daily 105-minute math class. In SY 2012-13, the sixth-grade teacher used Khan Academy to support self-paced instruction guided by instructional packets she had developed for each unit. The packets integrated work on Khan Academy with work on worksheets, problems in the textbook, and pen-and-paper quizzes. In any given week, the teacher typically delivered whole-class instruction on two of the days, with the remaining time dedicated to students' working at their own pace through the material assigned in their packets, including work on Khan Academy problem sets (see the profile below for further details).
	Technology availability—The decision to pilot Khan Academy was supported by the school's acquisition of two carts containing enough notebook computers so that one-to-one computing was available every day.
5	**Site (SY 2011-12)**—In this diverse public school district, approximately 50% of students are considered "low income" (three of the district's seven elementary schools receive federal Title I funds), and 45% of students are English language learners.
	Schools and grades participating— A fifth-grade teacher from one elementary school and a seventh-grade teacher from one middle school participated.
	Intent— District leaders were interested in piloting Khan Academy because they were looking for ways to use technology to help differentiate instruction and specifically to improve students' math learning.
	Use model—Both teachers had students use Khan Academy to supplement the core curriculum and used weekly goal setting to link students' work on Khan Academy to topics covered during regular class time. After completing the weekly goals, students were free to explore Khan Academy content on their own. In the fifth-grade classroom, Khan Academy was scheduled for 30-minute sessions three times a week in addition to the daily 45 minutes of math time. In the middle school, Khan Academy was used in separate "intervention" sessions designed to support struggling learners that met 2 to 3 days per week. The grade 5 teacher also used Khan Academy in a daily afterschool support program that she ran for students who needed remedial math instruction.
	Technology availability—Both teachers shared a single computer cart with the other teachers in their respective schools.

Table B1. Research Sites in the 2011–12 Khan Academy Evaluation (Continued)

Research site	Description
6	**Site (SY 2011-12)—**This independent K–12 school specializes in instructing students with learning disabilities. **Grades participating—**The teachers of a fourth-grade class and a combined sixth- and seventh-grade class assigned students to classes on the basis of their age rather than performance. Thus, classes comprised students working across multiple grade levels. **Intent—**Central to the school's instructional vision are differentiated instruction and creating a classroom atmosphere that meets the students' physical and social needs. Use of Khan Academy as a self-paced instructional resource to support differentiated instruction fit well with this vision. Other Academy features (e.g., monitoring one's own progress, goal setting) also fit the school's goals for social development. **Use model—**Khan Academy was used to provide differentiated instruction and to facilitate classroom management by allowing the teacher to lead small-groups while other students engaged in independent learning. In the fourth-grade class, Khan Academy was used primarily with lower performing students (for approximately 20 minutes out of a 50-minute class period) while the teacher worked with other students in the room. In the combination grade 6-7 class, the teacher experimented with ways of using Khan Academy, sometimes assigning it to lower performing students as a remediation activity, and at other times giving higher performing students opportunities to work with it as an enrichment activity. The teacher also explored Khan Academy as a supplemental activity for the whole class, presenting a common lesson and allowing students to use Khan Academy after completing the in-class assignment. Overall, the average student's use of Khan Academy was limited. **Technology availability—**In the classrooms observed, one-to-one computing was available to students. While using Khan Academy, some students worked at workstations located around the perimeter of the classroom while the remaining students retrieved netbooks and worked at their desks or at tables with other students.
7	**Site (SY 2011-12)—**This low-achieving public middle school (grades 5–8) serves a low-income Latino community. **Grades participating—** One sixth-grade teacher and all sixth-grade students participated. Khan Academy was also used in an afterschool program attended by all sixth-graders. **Intent—** The school was in fifth year of Program Improvement status under federal Title I guidelines as a result of not making adequate yearly progress, based on state test performance. The school, under considerable pressure to improve performance, is required to implement a California Department of Education-mandated intervention curriculum, including an extended school day. A national afterschool program is partnering with the school to expand the learning day. **Use model—** During regular school hours, Khan Academy was used in the classroom once a week for 30 to 40 minutes as a self-directed remediation and enrichment activity depending on individual students' needs. At the start of each session the teacher recommended a list of problem sets and videos to work with that were associated with their weekly math lesson; however, students had complete discretion over the Khan Academy content they worked on. Allowing that choice was consistent with the teacher's view that Khan Academy was both a motivational tool and a tool for differentiating instruction. Use of Khan Academy in the after-school program was limited because of competing demands on the instructors' time and the emphasis on the use of the time for homework support and completion. **Technology availability—**Access to computers was limited. The teacher shared a single laptop cart with the other teachers in the school.

Table B1. Research Sites in the 2011–12 Khan Academy Evaluation (Continued)

<table>
<tr><th>Research site</th><th>Description</th></tr>
<tr><td>8</td><td>Site (SY 2011-12)—This public charter high school (grades 9–12) serves a low-income urban community.

Grades participating—One teacher taught a ninth-grade algebra readiness classroom, and one teacher taught ninth-grade algebra I and tenth-grade geometry. Ninth-graders also participated in a 50-minute math lab overseen by the ninth-grade algebra readiness teacher.

Intent—The school's educational vision emphasizes character building, responsibility, and defeating "learned helplessness" that developed during students' prior schooling. Khan Academy served to efficiently hold all students accountable to those standards while helping students with the greatest needs master the skills they had not acquired in prior grade levels.

Use model—Algebra Readiness. The first semester's algebra readiness class focused on filling gaps in students' math knowledge through work on Khan Academy problem sets and through teacher-led small group instruction. Weekly test results indicated which students lacked required basic skills; those who did met in small groups to receive instruction in those skills while other students worked on Khan Academy problems. In the second semester, the content shifted to lessons on grade-level algebra skills. Each period started with direct instruction on a specific skill, with students then practicing that skill using Khan Academy problem sets.

Algebra I. After 20 minutes of teacher-led instruction, students began working on Khan Academy. The students worked on teacher-assigned problem sets on topics aligned to the daily lesson. Students not completing their weekly assignments were required to attend an after-school session on Fridays to complete their work.

Learning Lab. In the 40-minute learning lab students worked on the assigned weekly problem sets listed on the school's online classroom management Website. After completing the assigned problem sets, students worked on uncompleted problems from past units, which were also listed on the class Website. Small groups of the students who needed extra help with the week's problem sets met with the teacher while the rest of the class worked with Khan Academy.

The teachers did not use the Khan Academy videos.

Technology availability—Enough minitablets for one-to-one computing were available in each classroom. No headphones were available for students to use while using Khan Academy.</td></tr>
<tr><td>9</td><td>Site (SY 2012-13)—This public charter grade 6-12 school (the school enrolled only grades 6-8 during the study) serves a low-income urban, predominantly Latino, community.

Grades participating— Two teachers participated. One teacher taught sixth-grade math, and the other teacher taught seventh- and eighth-grade math.

Intent—The school's educational vision consists of exposing students to individualized learning experiences, enhancing student intelligence (which it believes is not innate) through effort, and providing a supportive environment where it is safe to make mistakes. Work on Khan Academy problem sets was used to support this vision.

Use model—During first semester SY 2012-13, the sixth-grade teacher, with access to 12 computers in her classroom, used Khan Academy in a classroom-rotation model. While the teacher lectured one group of students, another group worked on Khan Academy problem sets, and a third group worked independently on teacher-assigned worksheets or an assessment. During the second semester, four more computers became available, and two groups were used—small group lecture and work on Khan Academy. The seventh- and eighth-grade teacher assigned Khan Academy problem sets both as a daily 30-minute warm-up activity and to support skill practice activity linked to the daily lesson.

Technology availability—Students in the sixth grade classroom had access to 12 computers (laptops and workstations) in the first semester of SY 2012-13 and 16 in the second semester. The seventh- and eighth-grade classroom had one-to-one computer use. The school did not provide headphones for students for use with Khan Academy. Students could provide their own headphones, but few students did so.</td></tr>
</table>

Appendix C. Summary of Data Collection Activities

Table C1. Site Visit Data Collection: Interview Participants and Observations

Site	Study Year	Types and number of interviews				Classrooms/ Labs Observed
		District/CMO** Leaders	School Leaders	Students	Teachers	
1*	2011-12	1	3	42	14	14
	2012-13	1 plus 2 coaches	0	0	9	9
2	2011-12	3	2	8	3	3
	2012-13	1	0	12	1	Learning lab plus classroom
3	2011-12	1	3	6	2	2
	2012-13	2	1	0	5	6
4	2011-12	NA	2	9	2	2
	2012-13	NA	1	0	1	1
5	2011-12	2	2	6	2	2
6	2011-12	NA	1	6	2	2
7	2011-12	Principal and leadership of the afterschool program	1	4	1 teacher and 3 afterschool instructors	Learning lab plus after school program
8	2012-13	NA	1	6	2	2
9	2012-13	NA	1	0	2	2
Total		**15**	**18**	**99**	**49**	**48**

* In SY 2012-13 held parent focus groups with a total of 16 parents

** Charter Management Organization

Table C2. Teacher and Student Survey Response Rates by Study Year

Study Year	Teachers	Students
	Percent (number)	Percent (number)
SY 2011-12	81 (51 of 63)	79 (1,531 of 1,936)
SY 2012-13	90 (54 of 60)	87 (1,921 of 2,199)

Appendix D. Technical Appendix

This appendix describes the modeling of academic achievement data from Site 8 and the relationship between student use data and achievement and nonachievement outcomes from Site 1 and Site 9.

Data Preparation

Student data was accessed directly from the sites (student demographics and achievement data), the research team survey (nonachievement outcome data), or from Khan Academy (student use data). The data was accessed following the approval of the research team's data collection plan and instrumentation by SRI's Institutional Review Board and after the signing of a data use agreement between leaders at each of the sites and SRI that outlined how the data would be used, secured, and how student confidentiality would be protected.

To maintain confidentiality of teacher and student data collected, once accessed the data was deposited to a secure file server at SRI to which only a limited number of SRI staff had access. A data analyst not otherwise involved with the project then substituted a consistently formatted SRI-generated ID number for the site-specific IDs or other teacher and student identifiers before releasing the file to the analysis team.

Data elements were checked for appropriate values. The records themselves were checked for duplicate IDs in the cases where none should have been present. When questions or discrepancies appeared, the site was contacted to resolve the issues.

Analyzing the Effect of Khan Academy Use on Student Test Scores (Site 8)

Statistical Modeling

The basic effects estimator model compares the spring scores on a summative outcome measure between a treatment sample of students (who used Khan Academy) and a comparison sample (who did not use Khan Academy), controlling for a measure of prior achievement. The summative outcome measure used was students' spring scores on the California Standards Test (CST). The prior achievement measure used was a grade 9 algebra placement exam administered by the school. The prior achievement measure served two functions: it increased the statistical power of the model by accounting for outcome variance (reducing the variance of the error term), and, in some cases, it partially adjusted for differences in the achievement distributions of the treatment and control groups.

Separate models were run for grade 9 students enrolled in the algebra I classroom in fall 2011 and grade 10 students enrolled in geometry in fall 2012 (many of the same students appeared in both analytical samples). The spring CST scores for the grade 9 students in 2012 were compared with scores for grade 9 students enrolled in algebra 1 in 2011. For the grade 10 students in geometry, spring scores for the SY 2012-13 student cohort were compared with the scores for the SY 2011-12 cohort.

Before fitting models, the two groups were compared on the basis of prior achievement measures to ascertain the similarity of the distributions of those measures. In accordance with a U.S. Department of Education's What Works Clearinghouse guideline (U.S. Department of Education, 2010), treatment and comparison prior achievement measures that differed by more than .25 standard deviations were not modeled. Although some statistical matching methods (e.g., use of a prior achievement score as a covariate) may correct for minor existing achievement differences, the guideline considered differences greater than .25 standard deviations to pose an unacceptable risk for bias in the treatment effect estimate.

Main Effects Model Specification

A multiple linear regression model was used to model the expected outcomes by group, after controlling for prior achievement. The general impact model is specified as:

$$Y_{ijk} = \beta_0 I_t + \beta_1 I_c + \beta_2 X,$$

where I_t and I_c are dichotomous indicator variables equal to 1 for a student who belongs to the treatment or comparison condition, respectively, and X is a standardized (mean 0, variance 1) measure of prior achievement.

This model has no constant intercept term; instead, separate intercepts are fit for each treatment condition. We estimated the mean effect as the difference $b_0 - b_1$, which is the difference in expected outcome values (after adjusting for prior achievement) at the mean value of the prior achievement measure. That is, $b_0 - b_1$ represents the effect for the average student in CST scale score points.

We converted the effect estimate to a standardized effect size (Cohen's d) following standard practices: we computed the pooled standard deviation of the outcome measure, and divided the effect by this pooled standard deviation. This effect size indicated the effect expressed in standard deviation units.

Model Parameter Reference Table

Table D1 lists each impact model estimated. The columns specify the coefficient of the fixed effects of the model, the standard error, and when appropriate the p-value. No p-value is specified for the coefficients of the group indicator variables; those coefficients are point estimates of group means, not contrasts that could be tested against a null hypothesis value of zero.

In addition to the model coefficients, we also list the results of specific statistical tests (e.g., the contrast between the point estimates of two group means) as well as the number of cases used in the model.

Analyzing the Relationship Between Khan Academy Use Data and Achievement (Site 1 and Site 9) and Nonachievement Outcomes (Site 1)

This section describes the preparation and modeling of system log data from Khan Academy. Table D2 shows the lists of student-level use variables that Khan Academy provided with the approval of the local sites and SRI's Institutional Review Board; the procedures described above for the protection of teacher and student confidentiality were followed.

The following variables were constructed from the raw use data and used to describe variation in use across sites, schools, and students and, in the case of total minutes and problem set proficiency, to examine the relationship between use and student outcomes:

Total minutes. This variable captured the total amount of time that students spent on Khan Academy working with problem sets or watching videos. These activity minutes, therefore, represent students' time engaged with Khan Academy and not the entire amount of time a student was logged into the Website. This variable was derived by summing

Table D1. Model Parameter Reference Table for Effect Estimates (Site 8)

Model	Parameter	Standard Error	Effect Size	*p*
Grade 9: Algebra I, 2012 vs 2011				
Fixed Effects				
2011 Expected Value	335.96	335.96		
2012 Expected Value	364.73	364.73		
G9 Algebra Placement Test (Standardized)	30.95	30.95		<.001
N Cases	72.00			
Contrasts				
2012 vs. 2011 Contrast	28.77	8.35	0.61	.001
Grade 10: Geometry, 2013 vs 2012				
Fixed Effects				
2012 Expected Value	280.08	8.20		
2013 Expected Value	318.58	6.87		
G9 Algebra Placement Test (Standardized)	12.58	5.27		.017
N Cases	46.00			
Contrasts				
2013 vs. 2012 Contrast	38.51	10.70	1.03	<.001

the total number of minutes that students spent on Khan Academy videos and problem sets.

Problem sets and problem sets proficiency. Khan Academy provided the dates on which a student achieved "proficiency" on given problem sets. All problem sets with a proficiency date were counted and summed for each student. Each problem set also contained the number of minutes that a student worked on that problem set. For each student, the number of minutes across all problem sets on which he or she worked was summed.

Below, at, above grade level. For problem sets and videos, we determined whether students worked below, at, or above grade level. To create these groupings, Khan Academy provided grade-level alignments for all problem sets. We subtracted students' grade levels (e.g., fifth grade) from each problem set's assigned grade level. Each problem set per student was then coded as below, at, or above grade level. Whether a student logged problem set minutes or achieved proficiency on a problem set below, at, or above his or her grade level was also summed across all problem sets. Note, for ninth-grade students, above-grade level activity could not be computed. Because high school math courses are not restricted to particular grade levels, Khan Academy makes no grade-level distinction for content typically taught in grades 9-12 (e.g., geometry, algebra 2). Therefore, for high school use of Khan Academy only below and at grade level discriminations were possible.

Table D2. Student-level Khan Academy Use Data from User Log Files

File	Variable	Description
Student		
	Student user_id	Unique identifier for each student
	Energy Points	Total number of points the student earned for watching videos and solving problems.
	Registration Date	Date the student first registered for Khan Academy
	Last Login	Calendar date on which the student last logged into Khan Academy
Class		Aligns students with teachers and classes
	Student user_id	
	Coach user_id	Unique identifier for teacher assigned to students
	Class Code	Unique identifier for the class assigned to teacher and students
Coach		Aligns teachers with classes
	Coach user_id	
	Class Code	
	Name	Name used by teacher to refer to the class
	Size	Number of students participating in the class
Badges		Individual badge the student earned
	Student user_id	
	Badge Name	Name of each Khan Academy badge the student earned
	Badge Type	Different types of badges require different levels of effort and performance
	Date Earned	Date the student earned each badge
	Earned During Classtime	No/Yes whether the badge was earned between 8 a.m.-3 p.m., Monday-Friday
	Points Earned	Points per badge the student earned
Videos		Organized by individual video watched per student
	Student user_id	
	Video ID	Unique identifier for each video viewed by the student
	YouTube ID	YouTube identifier for each video the student viewed
	Video Name	Colloquial name for each video the student viewed
	Last Watched	Calendar date the student last watched a video
	Completed	No/Yes whether the seconds of the video the student watched were equal to or less than the video's duration
	Duration	Duration of each video watched
	Seconds Watched	Number of seconds each student watched per video
	Seconds Watched in Class	No/Yes whether the video was watched between 8 a.m.-3 p.m., Monday-Friday
	Seconds Watched Outside of Class	No/Yes whether the video was watched outside of class
	First Watched	The first date the student watched each video
	Completed Date	Date when the number of seconds the student watched the video equaled or exceeded its length

Table D2. Student-level Khan Academy Use Data from User Log Files (Continued)

File	Variable	Description
Daily videos		Summation of video information for each day Khan Academy was used
	Student user_id	
	Date	Calendar date the student watched a video(s)
	Seconds Watched In Class	Sum of the seconds each student watched a video(s) between 8 a.m.-3 p.m., Monday-Friday each day
	Seconds Watched Outside of class	Sum of the seconds a student watch a video(s) outside of class per day
Problem Sets (Exercises)		Organized by each exercise accessed per student
	Student user_id	
	Exercise Name	Colloquial name given to the exercise
	Status	Current status assigned by Khan Academy to an exercise: unstarted, practiced, mastery1, mastery2, or mastery3
	Proficiency Date	Calendar date on which the student achieved proficiency for an exercise
	First Date	Calendar date on which the student first accessed an exercise
	Last Date	Calendar date on which the student last accessed an exercise
	Exercise Seconds Spent in Class	Number of seconds the student spent on each exercise in class
	Exercise Seconds Spent Outside of Class	Number of seconds the student spent on each exercise outside of class
	Total Problem Attempts	Number of problems the student attempted for each exercise
	Correct Answers	Number of problems the student answered correctly for each exercise
	Hints Relied On	Number of hints the student relied on for each exercise
Daily Problem Sets (Exercises)		Summation of exercise information for each day Khan Academy was used
	Student user_id	
	Date	Calendar date the student accessed an exercise(s)
	Seconds In Class	Sum of the seconds a student spent on an exercise(s) in class per day
	Seconds out of Class	Sum of the seconds a student spent on an exercise(s) outside of class per day
	Attempts	Sum of the problems a student attempted for an exercise(s) per day
	Correct Answers	Sum of the student's correct answers for an exercise(s) per day
	Hints Relied On	Sum of the hints the student used for an exercise(s) per day

Videos and video minutes. As with problem set minutes, the total number of minutes that a student logged across all of the videos he or she watched was summed. Only time spent on math videos was used. Khan Academy provided a separate file that allowed the research team to code whether a video was a "math" or "other" video. The time spent on videos classified as "other," which included the vast array of content areas provided on Khan Academy, was not included.

Analysis: Relationship Between Khan Academy Use and Student Achievement Outcomes

To examine the possible relationships between students' use of Khan Academy and their performance on summative standardized tests, we used a two-stage approach. First, we estimated the relationship between students' fall and spring test scores, categorizing students according to whether their spring test scores were higher or lower than predicted based on their fall test score. Second, we examined the relationship between scoring higher or lower than predicted based on the total number of minutes and problem sets completed on Khan Academy.

First-stage Model: Site 1

For Site 1 fifth- and sixth-grade students across the district's 7 elementary schools, we modeled the relationship between students' 2011 CST math scores and their 2012 CST math scores using a three-level hierarchical linear model—with students nested in classrooms in schools. We then computed the residual score (a student's actual 2012 score, minus the predicted score given the prior achievement score) and created an indicator variable to represent whether the residual was positive or negative. Students with positive residual values were coded as "higher than predicted" and students with negative residuals were coded as "lower than predicted."

The following first-stage model was used for Site 1:

Level 1: $Y_{ijk} = \pi_{0jk} + \pi_{100} X_{ijk} + \varepsilon_{ijk}$

Level 2: $\pi_{0jk} = \beta_{00k} + r_{0jk}$

Level 3: $\beta_{00k} = \gamma_{000} + u_{00k}$

Where

Y_{ijk} .... 2012 CST score for student (*i*) in classroom (*j*) in school (*k*)

X_{ijk} .... 2011 CST score for student *(i)*

π_{0jk} .... Intercept for classroom *(j)*

π_{100} .... Fixed effect of the 2011 CST score on the 2012 CST score

β_{00k} .... Intercept for school *(k)*

γ_{000} .... Grand intercept

ε_{ijk}, r_{0jk}, u_{00k} .... Random effects at student, classroom, and school levels, respectively

First-stage Model: Site 9

For Site 9, a single school, we used a standard regression model within each grade. The math scores for students in grades 6 through 8 on the Northwest Evaluation Association's Measurement of Academic Performance (NWEA MAP) administered in fall 2012 were used to predict the students' spring CST scores. As above, using the residuals from the regression model, students with positive residual values were coded as "higher than predicted" and students with negative residuals were coded as "lower than predicted."

The following model was used for the Site 9 analyses:

$Y_i = \beta_0 + \beta_1 X_i + r_i$

Where

Y_i .... CST 2013 score for student (*i*)

X_i .... NWEA MAP 2012 for student *(i)*

β_0 .... Intercept

β_1 .... Fixed effect of 2012 NWEA MAP score on 2013 CST score

r_i......... Error

Second-stage Model: Site 1

We fit a second set of models to explore the relationship between whether a student scored higher or lower than predicted on the spring 2012 CST test and the total number of problem sets he or she completed to proficiency and the amount of total minutes he or she logged on Khan Academy.

The following second-stage model was used for Site 1 (see Table D3):

Level 1: $Y_{ijk} = \pi_{0jk} + \pi_{100} X_{ijk} + \varepsilon_{ijk}$

Level 2: $\pi_{0jk} = \beta_{00k} + r_{0jk}$

Level 3: $\beta_{00k} = \gamma_{000} + u_{00k}$

Where

Y_{ijk} .... Outcome (number of problem sets or minutes) for student (*i*) in classroom (*j*) in school (*k*)

X_{ijk} .... Dichotomous variable indicating whether student had performed higher than predicted on 2012 CST ($X = 1$) or lower than predicted ($X = 0$)

π_{0jk} .... Intercept for classroom *(j)*

π_{100} .... Fixed effect of higher/lower than predicted indicator on outcome

β_{00k} .... Intercept for school *(k)*

γ_{000} ....Grand intercept

ε_{ijk}, r_{0jk}, u_{00k} .... Random effects at student, classroom, and school levels, respectively

Second-stage Model: Site 9

The following second-stage model was used for Site 9 analyses (see Table D4):

$Y_i = \beta_0 + \beta_1 X_i + r_i$

Where

Y_i .... Outcome for student (*i*)

X_i .... Dichotomous variable indicating whether student scored higher than predicted on 2013 CST (X = 1) or lower than predicted (X= 0)

β_0 .... Intercept

β_1 .... Fixed effect of higher/lower than predicted indicator on outcome

r_i......... Error

Table D3. Site 1 Second-stage Model for the Relationship Between Khan Academy Use and Student Learning

	Coefficient	*SE*	*p*
Fifth grade (n = 435)			
Outcome: Total Minutes			
Constant	998.8	194.2	.000
Higher than predicted	659.5	134.3	.000
Outcome: Problem sets completed			
Constant	66.4	6.7	.000
Higher than predicted	22.3	3.3	.000
Sixth grade (n = 415)			
Outcome: Total minutes			
Constant	837.6	103.6	.000
Higher than predicted	163.1	57.9	.005
Outcome: Problem sets completed			
Constant	89.3	11.5	.000
Higher than predicted	18.5	3.9	.000

SE =standard error.

Table D4. Site 9 Second-stage Model for Relationship Between Khan Academy Use and Student Learning

	Coefficient	*SE*	*p*
Sixth Grade (n = 91)			
Outcome: Total minutes			
Constant	1657.1	107.9	.000
Better than predicted	88.8	150.1	.554
Outcome: Problem sets completed			
Constant	65.4	4.0	.000
Better than predicted	16.3	5.6	.003
Seventh Grade (n = 100)			
Outcome: Total minutes			
Constant	2349.4	114.1	.000
Better than predicted	447.5	164.7	.007
Outcome: Problem sets completed			
Constant	104.1	4.3	.000
Better than predicted	9.7	6.2	.120
Eighth Grade (n = 51)			
Outcome: Total minutes			
Constant	1889.5	179.8	.000
Better than predicted	289.2	251.8	.251
Outcome: Problem sets completed			
Constant	94.6	8.7	.000
Better than predicted	26.3	12.2	.032

SE =standard error.

Analysis: Relationship Between Khan Academy Use and Nonachievement Outcomes

Next we describe a set of analyses using nonachievement outcome measures included on the student survey, which was administered in both fall 2012 and spring 2013. In these analyses, we explored the relationship between indicators of students' use of Khan Academy (total minutes of use and problem sets completed to proficiency) and whether they scored higher or lower than predicted on the spring measures based on their fall scores on the same set of measures. We used the same overall analysis strategy described above for our analyses of the relationships between Khan Academy use indicators and students' performance on standardized assessments. After categorizing students according to whether their spring scores on the nonachievement outcome measures were higher or lower than predicted based on their fall scores, we examined the relationship between scoring higher or lower than predicted on these measures and the total minutes of use and problem sets completed to proficiency.

Below, we describe survey scales that were used and have previously been demonstrated to be strong predictors of students' performances in math. These scales include (1) Academic Self-Efficacy, (2) Math Anxiety, (3) Math Interest, and (4) Math Self-Concept. For each student we computed the mean score over a scale's items for the fall and spring administrations of the student survey.

Table D5 shows the Pearson correlation coefficients amongst the measures for the student samples included in the research. Table D6 shows the Cronbach's alpha coefficients for the scales; a measure commonly used to assess the reliability (or consistency) of scales used in survey research (Cronbach, 1951; Hattie, 1985).[13]

Academic Efficacy. This scale, which was developed as part of the Patterns of Adaptive Learning Study (PALS), assesses students' perceptions of their competence to do their class work (Midgley et al., 1998). Students' responses to the following five survey items were included in the measure using a 5-point Likert scale from Strongly Disagree to Strongly Agree.

- I'm certain I can learn the skills taught in math class this year.
- I can do almost all of the work in math class if I don't give up.
- Even if math is hard, I can learn it.
- I'm certain I can figure out how to do the most difficult math work.
- I can do even the hardest math if I try.

Math Anxiety. This scale was developed for the Programme of International Student Assessment (PISA) and focuses on "the worry component" of math anxiety (Ferla, Valcke, & Cai, 2009). Students' responses to the following five survey items were included in the measure using a 5-point Likert scale from Strongly Disagree to Strongly Agree.

- I often worry that it will be difficult for me in math classes.
- I get tense when I have to do math homework.
- I get nervous when doing math problems.
- I feel helpless when doing a math problem.
- I worry that I will get poor grades in math.

Table D5. Pearson Correlation Coefficients among Survey Scales

	Academic Efficacy		Math Anxiety		Math Self Concept	
	Fall	Spring	Fall	Spring	Fall	Spring
Academic Efficacy	-	-				
Math Anxiety	-.45	-.46	-	-		
Math Self Concept	.64	.64	-.65	-.57	-	-
Math Interest	.55	.53	-.39	-.32	.51	.48

Sample sizes: Fall measures = 856 students; Spring measures = 838 students.
Note: All correlations are statistically significant at the p < .001 level.

Table D6. Cronbach's Alpha for Nonachievement Survey Scales (Fall and Spring, SY2012-13)

	Cronbach's Alpha	
	Fall (*N*=856)	Spring (*N* =838)
Academic Efficacy	.825	.834
Math Anxiety	.781	.799
Math Self Concept	.838	.867
Math Interest	.910	.912

[13] A "high" value is often used to indicate that the individual items comprising a scale are measuring the same underlying construct. Values between 0.7 to 0.9 are generally considered an indication that a measure has "good" reliability or consistency and above 0.9, "excellent" reliability.

Math Self-concept. The PISA math self-concept items measure "the ability component" of self-concept beliefs (Ferla et al., 2009). Students' responses to the following five survey items were included in the measure using a 5-point Likert scale from Strongly Disagree to Strongly Agree.

- I learn math quickly.
- In my math class, I understand even the most difficult work.
- I get good grades in math.
- Math is one of my best subjects.
- I am just not good at math (this item was reverse-coded).

Math Interest. The PISA math interest items measure "the enjoyment aspect" of math interest (Ferla et al., 2009). Students' responses to the following four survey items were included in the measure using a 5-point Likert scale from Strongly Disagree to Strongly Agree.

- I enjoy learning math.
- I do math because I enjoy it.
- I am interested in the things I learn in math class.
- I look forward to my math class.

First-stage Model

For Site 1, we explored the relationship between a student's mean scale score from fall 2012 and his or her spring 2013 mean scale score using a three-Level hierarchical linear model (HLM)—with students nested in classrooms in schools. Using these models, we computed a residual score and coded students as "higher than predicted" or "lower than predicted."

The following first-stage model was used for Site 1:

Level 1: $Y_{ijk} = \pi_{0jk} + \pi_{100} X_{ijk} + \varepsilon_{ijk}$
Level 2: $\pi_{0jk} = \beta_{00k} + r_{0jk}$
Level 3: $\beta_{00k} = \gamma_{000} + u_{00k}$

Where

Y_{ijk} .... Spring 2013 survey scale score for student (*i*) in classroom (*j*) in school (*k*)
X_{ijk} .... Fall 2012 survey scale score for student (*i*)
π_{0jk} .... Intercept for classroom *(j)*
π_{100} .... Fixed effect of 2012 scale score on the 2013 scale score
β_{00k} .... Intercept for school *(k)*
γ_{000} ....Grand intercept
$\varepsilon_{ijk}, r_{0jk}, u_{00k}$ .... Random effects at student, classroom, and school levels, respectively

Second-stage Model

We then fit a second set of models for each nonachievement outcome measure as we explored whether students who scored higher or lower than predicted on the measures completed different numbers of problem sets to proficiency or logged different amounts of total minutes on Khan Academy.

The following second-stage model was used for Site 1 (see Table D6):

Level 1: $Y_{ijk} = \pi_{0jk} + \pi_{100} X_{ijk} + \varepsilon_{ijk}$
Level 2: $\pi_{0jk} = \beta_{00k} + r_{0jk}$
Level 3: $\beta_{00k} = \gamma_{000} + u_{00k}$

Where

Y_{ijk} .... Outcome for student (*i*) in classroom (*j*) in school (*k*)
X_{ijk} .... Dichotomous variable indicating whether student had performed higher than predicted on the spring 2013 survey scale ($X = 1$) or lower than predicted ($X = 0$)
π_{0jk} .... Intercept for classroom *(j)*
π_{100} .... Fixed effect of higher/lower than predicted indicator on outcome
β_{00k} .... Intercept for school *(k)*
γ_{000} ....Grand intercept
$\varepsilon_{ijk}, r_{0jk}, u_{00k}$ .... Random effects at student, classroom, and school levels, respectively

Table D7. Site 1 Second-stage Model for the Relationship Between Khan Academy Use and Student Survey Items

	Coefficient	*SE*	*p*
Academic Efficacy			
Outcome: Total Minutes			
Constant	725.2	243.3	.003
Better than predicted	165.9	76.8	.031
Outcome: Problem sets completed			
Constant	46.8	6.5	.000
Better than predicted	8.8	2.2	.000
Math Anxiety			
Outcome: Total Minutes			
Constant	846.5	240.7	.000
Better than predicted	-67.6	77.4	.383
Outcome: Problem sets completed			
Constant	55.1	6.4	.000
Better than predicted	-7.3	2.3	.001
Math Self Concept			
Outcome: Total Minutes			
Constant	724.6	243.4	.003
Better than predicted	166.2	77.2	.031
Outcome: Problem sets completed			
Constant	47.6	6.5	.000
Better than predicted	7.3	2.3	.001
Math Interest			
Outcome: Total Minutes			
Constant	808.3	241.5	.001
Better than predicted	9.38	77.1	.903
Outcome: Problem sets completed			
Constant	49.6	6.5	.000
Better than predicted	3.7	2.3	.101

SE: Standard error.

Sample sizes
Total minutes outcome models = 831 students; Problem sets completed outcome models = 826 students.

SRI Education

SRI Education
333 Ravenswood Avenue
Menlo Park, CA 94025
Phone: 650.859.2000

www.sri.com/education

Developed by SRI Education with funding from the Bill & Melinda Gates Foundation.

Bill & Melinda Gates foundation

CONNECT:
Making Learning Personal
An Issue Brief from the League of Innovators

Why the Personal Competencies Matter

by
Sam Redding

Over breakfast the morning of November 8, 1987, I snapped open a *Chicago Tribune* and stared at a bold headline: "Education Chief: City Schools Worst." U. S. Secretary of Education William Bennett had declared Chicago the worst school district in the country. Two days earlier, the superintendent of one of Chicago's intra-district regions had invited me to visit a school with him, not because he was proud of it but because he considered it the "worst damn school in Chicago." Putting the *Trib* aside to sip my coffee, I realized I had walked the halls of the worst school in the worst district in the country.

Since the mid-1980s, Chicago has undergone waves of reform, and no one would call it the worst district in the country now. Maybe it wasn't the worst in 1987. My purpose isn't to degrade the largest district in my state. If we would locate today the former students of the school I visited, we would find among them some success stories. We would identify students who made it through high school and college and are now successful in their careers. These might be a small minority of the students who once attended the worst school in the country, but they would be there to be found. Here is my point: Even in the worst schools in the country, some students succeed. Conversely, even in the best schools in the country, some students fail.

In those days, working with dozens of Chicago schools, I found myself advising parents to pitch in with the school reform efforts as they were able, but not to count on the schools being fixed before it was too late for their kids. Take care of your kids today, I advised; much of what they need to succeed, you can provide. It is the "something other," the intangible mix of general knowledge, stick-to-itiveness, self-respect, and disciplined study that we too little understand. If we understood these qualities better, we might be able to see that more students acquire them and, in doing so, accelerate their school learning and improve their chances once out of school.

This field report is the fourth in a series produced by the Center on Innovations in Learning's League of Innovators. The series describes, discusses, and analyzes policies and practices that enable personalization in education. Issues of the series will present either issue briefs or, like this one, field reports on lessons learned by practitioners recounting the successes and obstacles to success encountered in implementing personalized learning.

Neither the issue briefs nor the field reports attempt to present in-depth reviews of the research; for those resources readers are encouraged to access the Center on Innovations in Learning's resource database. Topics should be of particular interest to state education agencies and district and school personnel.

www.centeril.org
Center on Innovations in Learning

Benjamin Bloom once wrote that what any one person can learn, 95% of other people can learn given enough time. That's encouraging. Recently, Carol Dweck has made a similar point—the growth mindset is not fixed. (How could it be if growth is involved?) Learning comes with effort, smart strategy, the conditions that support them, and, as Bloom said, with time.

A student's personal competencies—cognitive, metacognitive, motivational, and social/emotional—propel learning and other forms of goal attainment. They are, yes, personal to the individual in their shape and size and effect. But they are enhanced by families and teachers and youth groups and other venues that intentionally build them. For schools, the challenge is how to reach each student to ensure that he or she continues constructing this underlying architecture of personal competencies so that school learning is facilitated.

The four personal competencies actually coalesce into a productive mix of learning habits that are engaged when the student assumes a learning challenge. Each competency is itself significant to the learning enterprise, but together they become a force for achievement. A quick definition of the four personal competencies follows:

- **Cognitive Competency**—prior learning that facilitates new learning
- **Metacognitive Competency**—self-regulation of learning and use of learning strategies
- **Motivational Competency**—engagement and persistence in pursuit of learning goals
- **Social/Emotional Competency**—sense of self-worth, regard for others, and emotional understanding and management to set positive goals and make responsible decisions

The connection between the personal competencies and the mechanics of learning may be described as the enactment of learning habits, the thinking and the activity, that results in mastery of school learning that, in turn, reinforces the competencies themselves. Teachers and families intentionally enhance students' competency within the context of the school community (families, students, school personnel), the school (curriculum, programs, school culture), and the classroom (instruction and classroom culture).

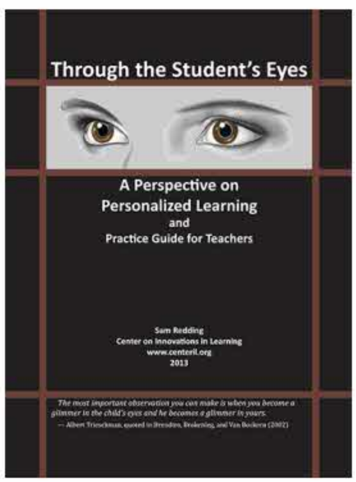
For instance, consider our hypothetical student, Jack, who is faced with an assignment from his teacher. Does his motivational trigger spring forth to launch him into the work? Does he persist even when the going gets tough? As much as motivation, Jack is benefited by knowing something—bits of information and nuggets of understanding cluster around the assignment to lubricate his learning. But that isn't enough. He needs learning skills and strategies—metacognitive overview of how he is doing and ways to master, memorize, understand, and complete. Then there is the added touch of self-worth that encourages Jack to buck up and do his best, to engage others in the learning process—asking questions, probing.

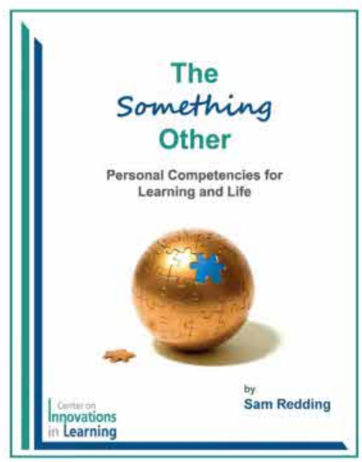
Ideally, every school and every classroom would be perfectly suited for every student. But in the real world, it is good practice for families and teachers to bolster their children and students with sufficient doses of personal competency to carry them through difficult waters. In fact, students are then able to bridge the troubled waters, to find safe harbors, and to navigate placid streams.

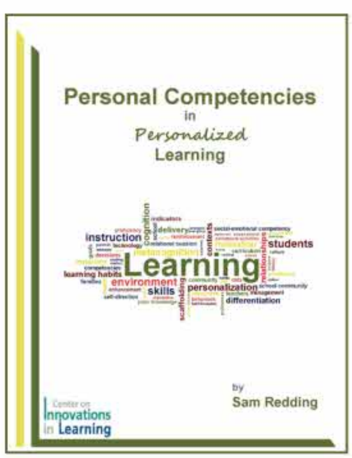
It all sounds a bit magical—turning on the bright light inside each student. It takes work and effort, too. Operating with three personal competencies, or two, or one, is to be hobbled. Some motivation without cognitive content, or metacognitive strategies without social/emotional engagement, would be incomplete. When all four personal competencies are engaged, everything clicks. Even in the worst school in the world, the happy student will find a way to learn. And because most students go to very good schools, equipping them with personal competency enables them to succeed anywhere.

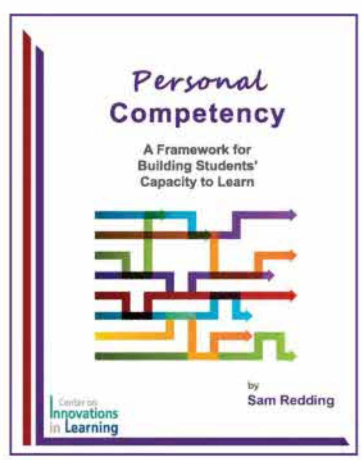
There are many ways personal competencies may be enhanced. For more on personal competencies, download the four practice guides published by the Center on Innovations in Learning from its webpage, www.centeril.org/research, or simply click on the image:

- Through the Student's Eyes (PDF)
- The Something Other (PDF)
- Personal Competencies in Personalized Learning (PDF)
- Personal Competency: A Framework (PDF)









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The **League of Innovators**, a network of state education agency and Regional Comprehensive Center personnel with an interest in learning innovations, is organized and administered by the **Center on Innovations in Learning**.

The **Center on Innovations in Learning** (CIL) is a national content center established to work with regional comprehensive centers and state education agencies (SEA) to build SEAs' capacity to stimulate, select, implement, and scale up innovations in learning. In partnership with the Academic Development Institute (ADI), Lincoln, Illinois, the Center on Innovations in Learning is affiliated with Temple University College of Education, Philadelphia, Pennsylvania. The Center is funded by the U.S. Department of Education, Office of Elementary and Secondary Education (OESE), under the comprehensive centers program, Award # S283B120052-12A. The opinions expressed herein do not necessarily reflect the position of the supporting agencies, and no official endorsement should be inferred.

Budget Narrative File(s)

*** Mandatory Budget Narrative Filename:** Budget_Narrative_TEDNA_NYCP.pdf

Add Mandatory Budget Narrative | Delete Mandatory Budget Narrative | View Mandatory Budget Narrative

To add more Budget Narrative attachments, please use the attachment buttons below.

Add Optional Budget Narrative | Delete Optional Budget Narrative | View Optional Budget Narrative

Budget Narrative

The Tribal Education Department National Assembly (*TEDNA*) serves Native American tribes across the entire United States. The NYCP proposal seeks to enhance the career and college readiness for Native students in grades 6-9 in four exemplar tribes that vary in size, issues, resources and percentage of students living off their reservation. For each tribe the budget provides for:

1) Personnel:

   a) One fulltime Education Specialist for each of the four tribes, each reporting to their Tribal Education Director and dedicated to all aspects of NYCP project success. Communication and coordination are key to assuring that the entire tribal community and collaborating LEA participate, learn, embody and own career and college readiness in proactive support of their Native youth. Annual salaries vary by tribe:

      i) Northern Cheyenne $29,120 (1.0 FTE) fulltime on NYCP

      ii) Muscogee $40,373 (1.0 FTE) fulltime on NYCP

      iii) Cheyenne-Arapaho $31,200 (1.0 FTE) fulltime on NYCP

      iv) Absentee Shawnee $31,200 (1.0 FTE) fulltime on NYCP

   b) Strong TEDNA program management and support via TEDNA's Executive Director (50%), dedicated NYPC Program Director (100%) and Support staff (30%), the latter two to be recruited and managed by the Executive Director to start as soon as possible after award notification.

      i) Executive Director $35,000 (0.5 FTE on $70,000 base)

      ii) NYCP Program Director $45,000 (1.0 FTE on $45,000 base)

      iii) NYCP Support $12,000 (0.3 FTE on $40,000 base)

2) Fringe Benefit bases and percentages/rates for Education vary by tribe/position as follows:

   i) Northern Cheyenne $29,120 base 28.8%

   ii) Muscogee $40,373 base 65.4% w 56% Section 125 contribution

   iii) Cheyenne-Arapaho $31,200 base 30.0%

   iv) Absentee Shawnee $31,200 base 61.7% w 23.1% health, 5% 401k, 18% '125'

   v) TEDNA $92,000 base 30.0%

3) Travel. This program will take advantage of all available and participant provides communication facilities including telephone, video conferencing, webinar tools, and email. The travel funding requested is as follows:

   a) Annual Project Directors meetings for (6) individuals: TEDNA's Executive and Program Directors and four tribal TED representatives at the OIE office in Washington, D.C. at an estimated at average of $1,500 per person including RT airfare [(1) TED from MT, (3) TEDs and TEDNA Executive Director from Oklahoma City, OK and (1) trip from a location to be determined] plus lodging and meals.

   b) Annual meetings for (6) individuals: TEDNA's Executive and Program Director and four tribal TED representatives at an estimated $1500 for (1) RT airfare from MT plus lodging. Conference space and meals to be provide by one of the three Oklahoma tribes. We anticipate that these 1-2 day meetings will occur midway between the Annual Project Directors meetings.

   c) Educational Specialist regional travel expenses essential to their NYCP responsibilities are estimated at a total of $5,000 per annum for the (4) Educational Specialists.

4) Equipment. (5) laptop computers and (5) smart phones are projected to $12,000. They will be allocated for use by the TEDNA NYCP Program and each of the four Education specialists.

The tribes and collaborating partners will provide their Education Specialist with NYCP access to other office equipment, each at their own expense.

5) Supplies include:

   a) ASPIRE, ENGAGE and ACT Profile tools will be used to collect, analyze and display information essential to program success. Aspire and Engage are each projected at $20 per student served based on vendor catalog prices. ACT Profile is then provided free of charge.

   b) Supply expenses: Office supply expenses to support (4) Educational Specialist and TEDNA supply are estimated to total $5,000 per annum.

6) Six highly qualified collaborating contractors, each of which will provide a unique and highly significant impact in terms of student learning, professional development, training and evaluation. Their combined contribution, with TEDNA's management and support from each tribe's Tribal Education Director and Education Specialist, is intended to provide a strong and positive learning opportunity and experience for all program participants. TEDNA is highly confident in their intent and capacity to serve individually and collaboratively given our many online conferences in preparation for this program. Contractor service descriptions, costs and time involvement details are as follows:

   a) Read Right Systems will provide live personal reading remediation tutoring sufficient to serve (8) students at each of four tribes each year. This tutoring is priced at Read Right's catalog price of $64 per POD of four students times (60) tutoring sessions, a total of $30,720 per annum. An additional $14,280 is to be applied to training and professional development for tribal and LEA staff. These Read Right services will incorporate use of Read Right's BlackBoard and Webex facilities at no additional expense. Dee Tadlock, Ph.D. Read Right's President and COO will be Read Right's primary NYCP program manager. Tom Brown, Read Right Systems' CEO/CFO will support her in this work

b) ACT's custom staff training and professional development services for each of the (4) NYCP tribal and collaborating LEA staff are projected at $30,000 in Years 1 and 3 and $2,000 in Years 2 and 4. Richard Moody is ACT's principal NYCP program director.

c) ADI/CIL's custom staff training and professional development services for each of the (4) NYCP tribal and collaborating LEA staff is budgeted at $20,000 per annum beginning in 2016 plus 1.5% per annum in Years 2 through 4. Mark Williams is ADI's principal NYCP manager.

d) NARF's Tribal Code training is budgeted at $15,000 per annum beginning in 2016 plus 1.5% per annum in Years 2 through 4. Matt Campbell, Esq. is NARF's principal NYCP manager.

e) Tuwaduq Cultural & Research Institute will perform NYCP Program performance evaluation at $37,500 per annum beginning in 2016 plus 1.5% per annum in Years 2 through 4. Michael Pavel, Ph.D. is Tuwaduq's principal NYCP evaluator.

7) Construction: None.

8) Other. No other funding is requested.

9) Total Direct Costs

	2016	2017	2018	2019	4 YR TOTAL
1. Personnel	$223,893	$227,251	$230,660	$234,120	$915,925
2. Fringe Benefits	$97,282	$98,741	$100,222	$101,726	$397,971
3. Travel	$15,500	$15,733	$15,968	$16,208	$63,409
4. Equipment	$12,000	$1,000	$2,000	$2,000	$17,000
5. Supplies	$10,520	$21,355	$37,429	$50,308	$119,615
6. Contractual	$147,500	$121,263	$151,051	$124,867	$544,681
7. Construction	$-	$-	$-	$-	$-
8. Other	$-	$-	$-	$-	$-
9. Total Direct Costs	$506,695	$485,343	$537,332	$529,229	$2,058,599

10) Indirect Costs: Funding at 10% of Total Direct Costs is requested to reimburse the Fiscal Agent for this program. TEDNA and the Cheyenne & Arapaho Tribe have agreed to contract for the Cheyenne & Arapaho Tribe to serve as Fiscal Agent as quickly as possible after notice of program award. The Tribe is highly qualified and experienced in this role.

10. Indirect Costs	$50,670	$48,534	$53,733	$52,923	$205,860

11) Training Stipends – None, not applicable

12) Total Costs (Direct and Indirect, no Stipends):

12. Total Costs	$557,365	$533,877	$591,065	$582,152	$2,264,458

There was a problem attaching a file(s).

The file was missing in the application package submitted through Grants.Gov

U.S. DEPARTMENT OF EDUCATION
BUDGET INFORMATION
NON-CONSTRUCTION PROGRAMS

OMB Number: 1894-0008
Expiration Date: 04/30/2014

Name of Institution/Organization

TRIBAL EDUCATION DEPARTMENTS NATIONAL ASSEMBLY CO

Applicants requesting funding for only one year should complete the column under "Project Year 1." Applicants requesting funding for multi-year grants should complete all applicable columns. Please read all instructions before completing form.

SECTION A - BUDGET SUMMARY
U.S. DEPARTMENT OF EDUCATION FUNDS

Budget Categories	Project Year 1 (a)	Project Year 2 (b)	Project Year 3 (c)	Project Year 4 (d)	Project Year 5 (e)	Total (f)
1. Personnel	223,893.00	227,251.00	230,660.00	234,121.00	0.00	915,925.00
2. Fringe Benefits	97,282.00	98,741.00	100,222.00	101,726.00	0.00	397,971.00
3. Travel	15,500.00	15,733.00	15,968.00	16,208.00	0.00	63,409.00
4. Equipment	12,000.00	1,000.00	2,000.00	2,000.00	0.00	17,000.00
5. Supplies	10,520.00	21,355.00	37,429.00	50,308.00	0.00	119,612.00
6. Contractual	147,500.00	121,263.00	151,051.00	124,867.00	0.00	544,681.00
7. Construction	0.00					0.00
8. Other	0.00					0.00
9. Total Direct Costs (lines 1-8)	506,695.00	485,343.00	537,330.00	529,230.00	0.00	2,058,598.00
10. Indirect Costs*	50,670.00	48,534.00	53,733.00	52,923.00	0.00	205,860.00
11. Training Stipends						
12. Total Costs (lines 9-11)	557,365.00	533,877.00	591,063.00	582,153.00	0.00	2,264,458.00

Indirect Cost Information** ***(To Be Completed by Your Business Office):

If you are requesting reimbursement for indirect costs on line 10, please answer the following questions:

(1) Do you have an Indirect Cost Rate Agreement approved by the Federal government? ☐ Yes ☒ No

(2) If yes, please provide the following information:

Period Covered by the Indirect Cost Rate Agreement: From: ______ To: ______ (mm/dd/yyyy)

Approving Federal agency: ☐ ED ☐ Other (please specify): ______

The Indirect Cost Rate is ______ %.

(3) For Restricted Rate Programs (check one) -- Are you using a restricted indirect cost rate that:

☐ Is included in your approved Indirect Cost Rate Agreement? or, ☐ Complies with 34 CFR 76.564(c)(2)? The Restricted Indirect Cost Rate is ______ %.

Name of Institution/Organization	Applicants requesting funding for only one year should complete the column under "Project Year 1." Applicants requesting funding for multi-year grants should complete all applicable columns. Please read all instructions before completing form.
TRIBAL EDUCATION DEPARTMENTS NATIONAL ASSEMBLY CO	

SECTION B - BUDGET SUMMARY
NON-FEDERAL FUNDS

Budget Categories	Project Year 1 (a)	Project Year 2 (b)	Project Year 3 (c)	Project Year 4 (d)	Project Year 5 (e)	Total (f)
1. Personnel						
2. Fringe Benefits						
3. Travel						
4. Equipment						
5. Supplies						
6. Contractual						
7. Construction						
8. Other						
9. Total Direct Costs (lines 1-8)						
10. Indirect Costs						
11. Training Stipends						
12. Total Costs (lines 9-11)						

SECTION C - BUDGET NARRATIVE (see instructions)

ED Form No. 524

Tracking Number:GRANT11950493 Funding Opportunity Number:ED-GRANTS-042815-001 Received Date:Jun 29, 2015 02:16:43 PM EDT

OMB Number: 1894-0007
Expiration Date: 07/31/2014

U.S. DEPARTMENT OF EDUCATION
SUPPLEMENTAL INFORMATION
FOR THE SF-424

1. Project Director:

Prefix:	First Name:	Middle Name:	Last Name:	Suffix:
Mr.	Quinton		Roman Nose	

Address:

Street1:	815 N. Noble Avenue
Street2:	
City:	Watonga
County:	
State:	OK: Oklahoma
Zip Code:	73772-000
Country:	USA: UNITED STATES

Phone Number (give area code)	Fax Number (give area code)
580-791-1694	

Email Address:

qromannose@tedna.org

2. Novice Applicant:

Are you a novice applicant as defined in the regulations in 34 CFR 75.225 (and included in the definitions page in the attached instructions)?

☐ Yes ☐ No ☒ Not applicable to this program

3. Human Subjects Research:

a. Are any research activities involving human subjects planned at any time during the proposed project Period?

☒ Yes ☐ No

b. Are ALL the research activities proposed designated to be exempt from the regulations?

☒ Yes Provide Exemption(s) #: Exemption 1,2,4,5

☐ No Provide Assurance #, if available:

c. If applicable, please attach your "Exempt Research" or "Nonexempt Research" narrative to this form as indicated in the definitions page in the attached instructions.

Exempt_Research_TEDNA_NYCP.pdf | Add Attachment | Delete Attachment | View Attachment

Tracking Number:GRANT11950493 Funding Opportunity Number:ED-GRANTS-042815-001 Received Date:Jun 29, 2015 02:16:43 PM EDT

Exempt Research – as applied within the TEDNA NYCP Project

All the research activities proposed are designated as exempt from regulations as defined by the U.S. Department of Education. Evaluation and research activities are exempt under the following categories:

- Research conducted in established or commonly accepted educational settings, involving normal educational practices, namely; (a) research on regular instructional strategies, and (b) research on the effectiveness of the project's activities. (DOE exemption 1)

- Research involving the use of educational tests (educational achievement), survey procedures, interview procedures or observation of public behavior, conducted in the normal educational settings. Individual identifiers will be coded to protect human subjects. Researchers will not directly participate in the activities being observed. (DOE exemption 2)

- Research involving the collection or study of existing data, documents, and records that are publicly available. Information will be recorded by the investigator in a manner that subjects cannot be identified, directly or through identifiers linked to the subjects. (DOE exemption 4)

- Research and evaluation activities will be conducted under the approval, and at the request of, local school administrators, and are designed to study and evaluate the proposed innovation. (DOE exemption 5)

EXECUTIVE BRANCH
GOVERNOR EDDIE HAMILTON
LT. GOVERNOR CORNELL SANKEY

P.O. Box 167
Concho, OK 73022
Telephone: (405) 422-7733
Fax: (405) 422-8224

June 24, 2015

Tribal Education Departments
National Assembly (TEDNA)
1506 Broadway
Boulder, CO 80302-6296

Dear TEDNA,

We would like to give you notification that the Cheyenne Arapaho Tribes is willing to negotiate a formal agreement which will lead the Cheyenne Arapaho Tribes serving as the fiscal agent, i.e., be responsible for financial reports as require by Office of Indian Education (OIE), US Department of Education based on the NYCP (Native Youth Community Project) grant if TEDNA is awarded a grant. It is understood by both parties that the formal agreement would include payment of services to Cheyenne Arapaho Tribes by TEDNA using NYCP grant monies.

This letter does not obligate to any financial requirements until both TEDNA and Cheyenne Arapaho Tribes sign a formal written agreement.

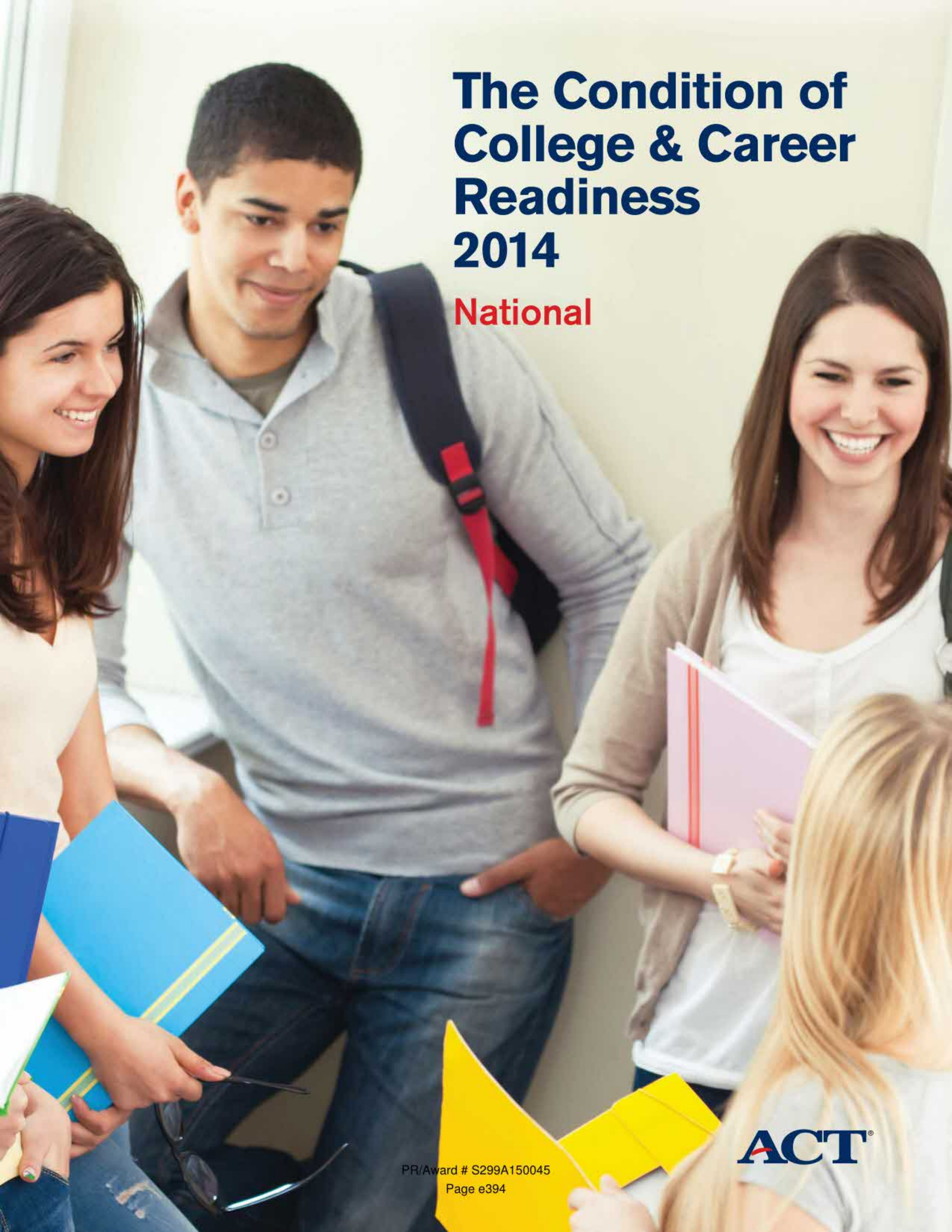
Sincerely,

(b)(6)

Eddie Hamilton,
Governor

The Condition of College & Career Readiness 2014

National



ACT

National

The Condition of College & Career Readiness 2014

The Condition of College & Career Readiness 2014 is ACT's annual report on the progress of the graduating class relative to college readiness. This year, 57% of the graduating class took the ACT® college readiness assessment. The increased number of test takers over the past several years enhances the breadth and depth of the data pool, providing a comprehensive picture of the current graduating class in the context of readiness levels as well as offering a glimpse of the emerging educational pipeline.

Our Commitment to College and Career Readiness

As a research-based nonprofit, ACT is committed to providing a wider range of solutions across a wider range of life decision points in an increasingly individualized manner so everyone can benefit. This commitment has led ACT to a mode of continuous improvement in an ever-changing educational and workplace landscape. Over the last year, ACT has made several key announcements, including:

- **Release of ACT Aspire™.** In spring 2014, ACT released an assessment system that spans grades 3–10. It aligns to the ACT College Readiness Standards, which allows monitoring and intervening to take place much earlier and helps prepare students to succeed at college-level work, culminating with the ACT college readiness assessment. To date, more than 1 million assessments have been taken.
- **Enhancements to the ACT college readiness assessment.** Several key modifications to the ACT were announced. These include:
  - Online, computer-based administration of the ACT, with more than 4,000 students tested in spring 2014
  - Optional constructed-response computer-based testing tasks in mathematics, reading, and science—offered alongside the existing optional Writing Test—assessing whether students can justify, explain, and use evidence to support claims
  - Additional questions on the Reading Test that address whether students can integrate knowledge and ideas across multiple texts
  - Additional statistics and probability items on the Mathematics Test to allow for reporting of student achievement in this area
  - Additional reporting to include a STEM score, career readiness indicator, English language arts score, text complexity indicator, and reporting categories consistent with college and career readiness language
  - Enhanced Writing Test based on the newly developed ACT writing competency framework that provides results in four domains

While the evolution of the ACT continues and additional scores will be provided, it will remain a curriculum-based achievement exam, and the 1–36 score scale will not change.

- **A continued commitment to evidence and validity monitoring.** The ACT National Curriculum Survey®, completed every three to five years, is used to build and update a valid suite of ACT assessments, empirically aligned to the ACT College Readiness Standards. The survey informs the test blueprint for the assessments. Assessment results validate the ACT College Readiness Standards and the ACT College Readiness Benchmarks. This evidence and the validity cycle drive the development and continuous improvement of ACT's current and future solutions, as well as the associated research agenda.
- **Release of ACT Profile™.** ACT Profile is a first-of-its-kind college and career planning community, built on 30-plus years of ACT research. Mobile, social, and *free to students* (over the age of 13), ACT Profile develops personalized insights and populates an interactive career graph to show students the best career matches based on their self-assessment results. The tool then extends those insights to help students make informed career and educational plans.

ACT is committed to being a leader in education and career success by infusing innovation into our foundation of assessment excellence. We make changes only after a thorough analysis of user need, coupled with our commitment to the highest-quality test development and helping *all* students achieve college and career success.

A Holistic View of College Readiness

ACT continues in its steadfast support of the purpose and intent of the Common Core State Standards, which focus on the key essential standards that can prepare students for college and career success. However, we also believe that academic readiness is just one of several factors that contribute to educational success. Other key factors include the academic behaviors of students and informed career planning (e.g., based on interests). Together, these elements define a clear picture of student readiness for postsecondary education. To encourage progress, the educational system needs to monitor and sustain all key factors of success.

Using This Report[1]

This report is designed to help educators understand and answer the following questions:

- Are your students prepared for college and career, and are your younger students on target?
- Are enough of your students taking core courses, and are those courses rigorous enough?
- What are the most popular majors/occupations, and what does the pipeline for each look like?
- What other dimensions of college and career readiness, like academic behaviors, should educators track?
- How are educators tracking progress on STEM initiatives?

Key Findings

National

About Your Graduating Class

Nationally, 1,845,787 students—or 57% of the 2014 US graduating class—took the ACT. This represents an 18% increase in the number of ACT-tested graduates since 2010. This report represents a subset of the entire student population, with the results reflecting the achievement of only those tested, not the entire graduating class. The diversity of the test-taking population has increased: the percentage of Hispanic ACT-tested graduates in 2014 was larger than in 2010, while the percentage of Caucasian ACT-tested graduates in 2014 was smaller. Among the national 2014 ACT-tested graduating class, 18% were potential first-generation college students whose parents did not enroll in postsecondary education.

Academic Achievement

The percent of graduates meeting the ACT College Readiness Benchmarks remained relatively steady this year. The number of students achieving the science Benchmark increased by 1%, while the number attaining the math Benchmark dropped by 1%. The percentage of students who met the English and reading Benchmarks remained the same. The national average ACT Composite score increased by 0.1 point compared to last year. Encouragingly, in several of the states that administer the ACT to all students—Kentucky, Michigan, North Carolina, Tennessee, and Wyoming—the average ACT Composite score improved by 0.2 to 0.3 points. This improvement is consistent with previous ACT data: gains in achievement are common in states that create an educational culture focused on college and career readiness.

Opportunity for Growth

The findings point to strong opportunities to improve college and career readiness in the areas of reading and science, where at least 10% of students earned scores only 1 or 2 points below the ACT College Readiness Benchmark. ACT research has shown those students meeting three or four ACT College Readiness Benchmarks—39% of the 2014 ACT-tested graduates—have a strong likelihood of experiencing success in first-year college courses. One way to improve college and career readiness is to ensure that more students take a college preparatory core curriculum in high school. Among 2014 test takers, 50% of core-taking students met the ACT College Readiness Benchmark in math, compared to 27% of non-core-taking students. Nearly one in four ACT-tested graduates did not plan to take a core curriculum, which translates to 405,073 more students who could have benefited from more rigorous coursework.

Student Aspirations

Encouragingly, 86% of 2014 ACT-tested graduates aspired to postsecondary education, but a significant number of those students might not actually enroll. Among the national 2013 ACT-tested graduating class, 87% aspired to attend college but only 69% actually enrolled. If this aspirational gap were fully closed, an additional 314,831 of the nation's 2013 ACT-tested graduates would have enrolled in postsecondary education.

What's Next?

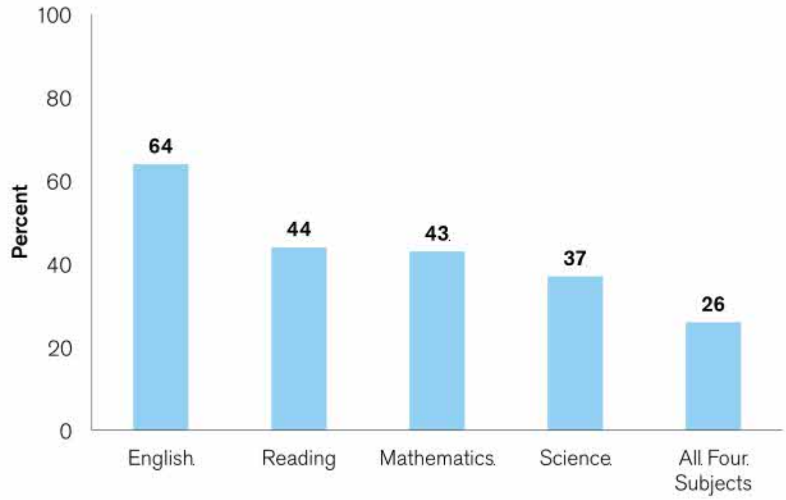
There is work to be done to improve the college and career readiness of our nation's students. Teaching to a higher set of standards, getting more students to take a core curriculum, and improving the rigor within those core courses are just a few of the ways we can begin to increase college and career readiness levels among students. Implementation of an integrated, longitudinal, data-driven system is needed to inform and encourage coherence in school, district, and state efforts to prepare all high school graduates for college and career. All students would benefit from systematic guidance and feedback regarding their academic progress starting early in their schooling. ACT research (*The Reality of College Readiness*, 2013; *Readiness Matters*, 2013) demonstrates that academically prepared students, as measured by the ACT College Readiness Benchmarks, are more likely than less-prepared students to succeed in their future educational endeavors. However, ACT research also suggests that there are other factors that impact student success, including the academic behaviors of students and informed career planning. ACT strongly encourages educators in states, districts, and schools to set and monitor student interventions on all of these key student success factors.

National

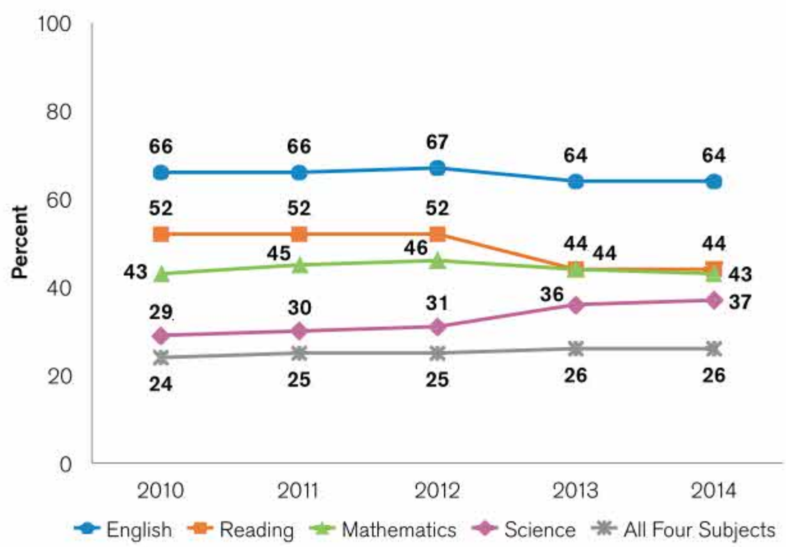
Attainment of College and Career Readiness

- 1,845,787 high school graduates, or an estimated 57% of the graduating class, took the ACT.*
- From 2010–2014, the number of ACT test-taking graduates has increased by 17.7%, while the estimated number of graduates has decreased by 2.8%.

Percent of 2014 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Subject



Percent of 2010–2014 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks**



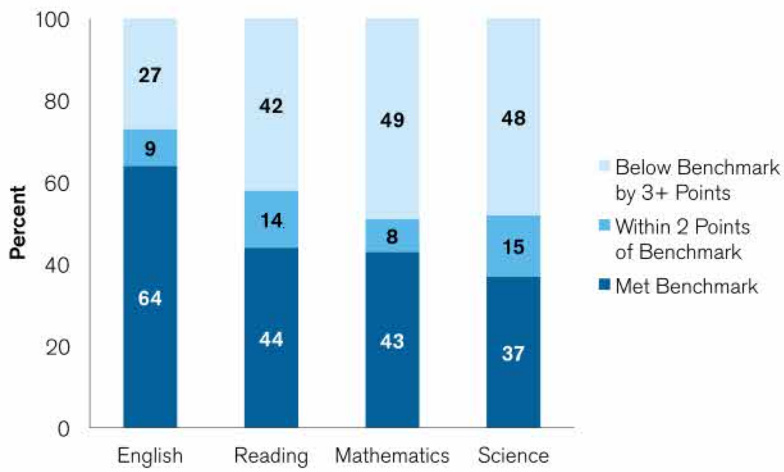
**ACT College Readiness Benchmarks in reading and science were revised in 2013. See page 19 for details.

* Totals for graduating seniors were obtained from *Knocking at the College Door: Projections of High School Graduates*, 8th edition. © December 2012 by the Western Interstate Commission for Higher Education.

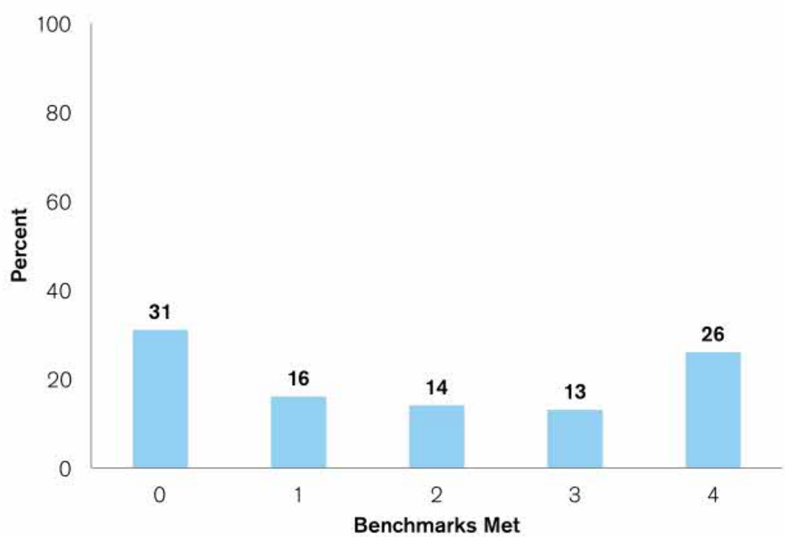
Note: Percents in this report may not sum to 100% due to rounding.

Near Attainment of College and Career Readiness

Percent of 2014 ACT-Tested High School Graduates by ACT College Readiness Benchmark Attainment and Subject



Percent of 2014 ACT-Tested High School Graduates by Number of ACT College Readiness Benchmarks Attained

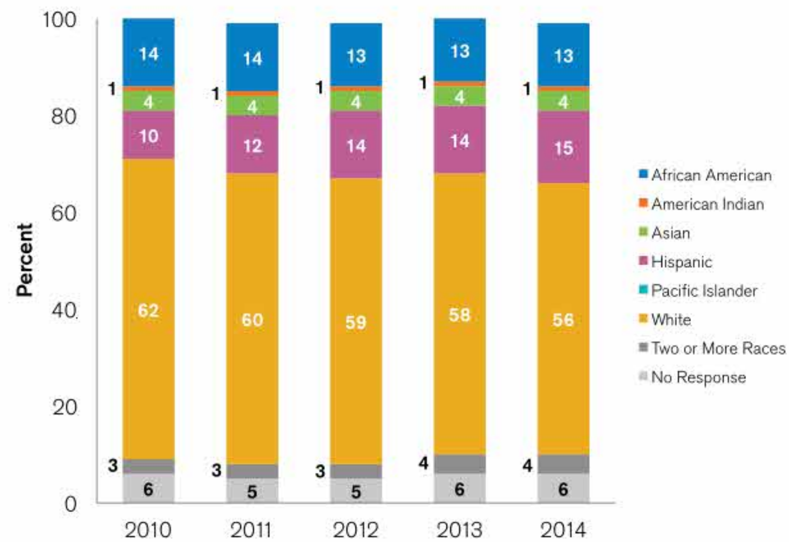


National

Participation and Opportunity

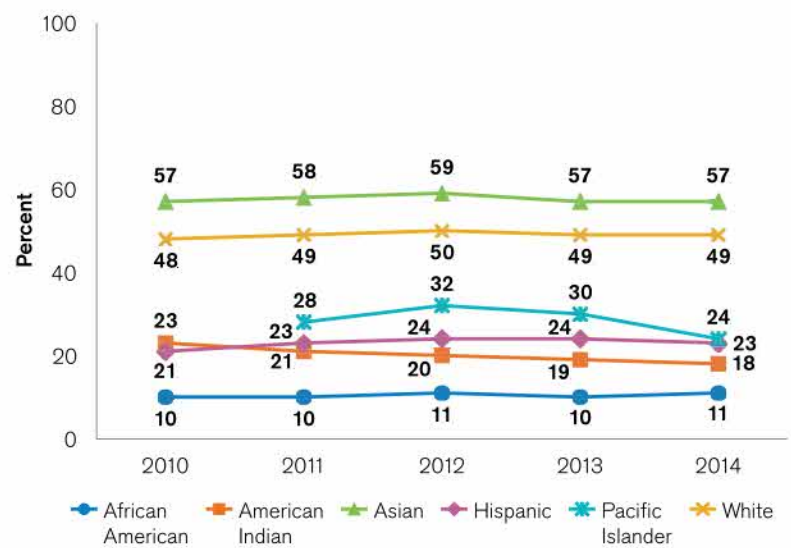
Over the past decade, ACT has experienced unprecedented growth in the number of students tested, as well as statewide partnerships in 13 states and in many districts across the country. As a result, the 2014 *Condition of College & Career Readiness* report provides a much deeper and more representative sample in comparison to a purely self-selected college-going population.

Percent of 2010–2014 ACT-Tested High School Graduates by Race/Ethnicity*



Note: Values less than 0.5% will not appear.

Percent of 2010–2014 ACT-Tested High School Graduates Meeting Three or More Benchmarks by Race/Ethnicity*



* Race/ethnicity categories changed in 2011 to reflect updated US Department of Education reporting requirements.[2]

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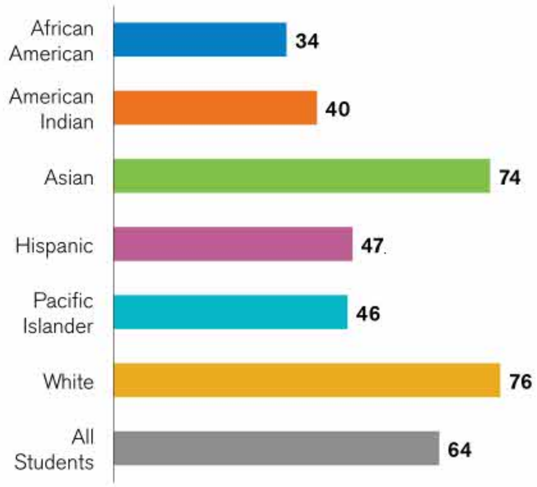
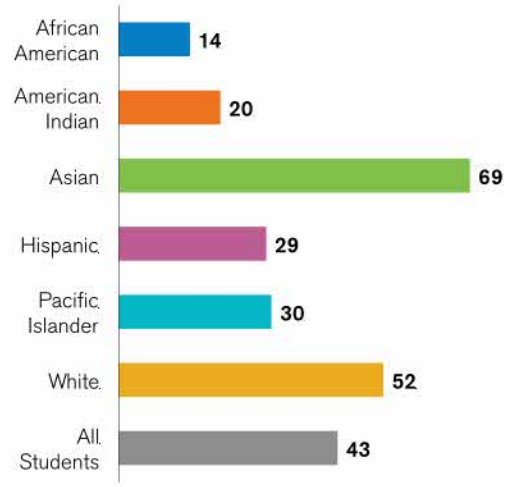
Participation and Opportunity by Subject

Percent of 2014 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Race/Ethnicity and Subject*

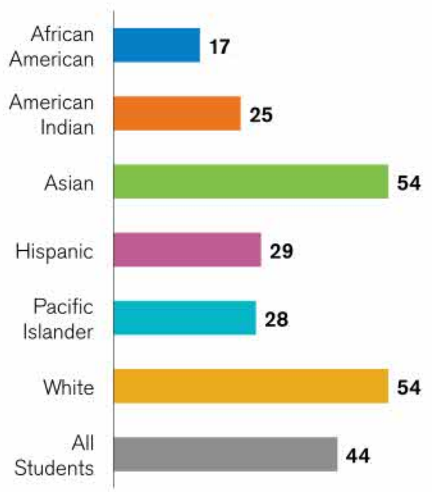
English



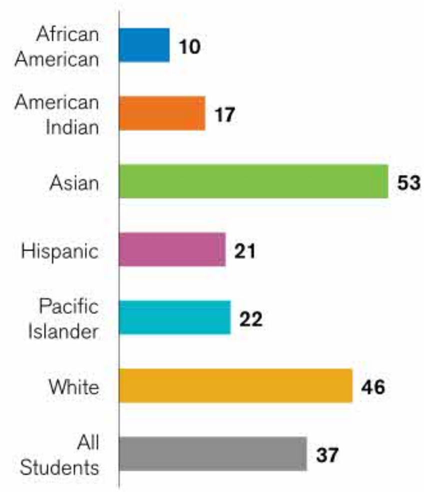
Mathematics



Reading



Science



* Race/ethnicity categories changed in 2011 to reflect updated U.S. Department of Education reporting requirements.[2]

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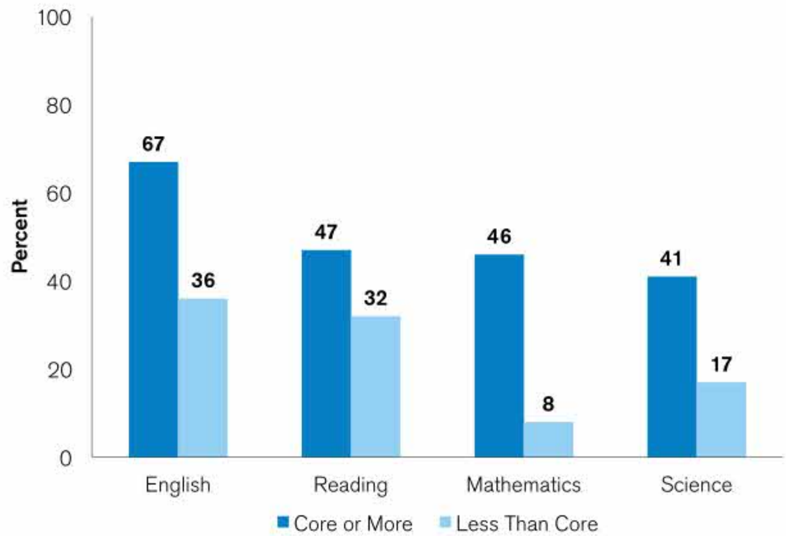
National

Course-Taking Patterns and Benchmark Performance

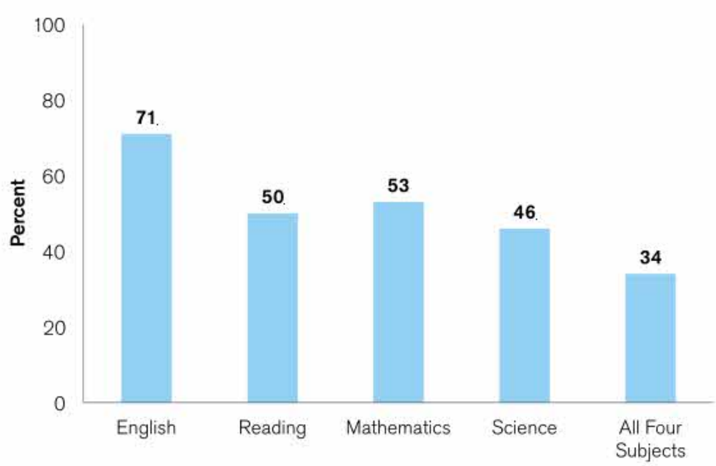
Within subjects, ACT has consistently found that students who take the recommended core curriculum are more likely to be ready for college or career than those who do not. A core curriculum is defined as four years of English and three years each of mathematics, social studies, and science.[3]

Percent of 2014 ACT-Tested High School Graduates in Core or More vs. Less Than Core Courses Meeting ACT College Readiness Benchmarks by Subject



A First Look at STEM

Percent of 2014 ACT-Tested High School Graduates with an Interest in STEM Meeting ACT College Readiness Benchmarks by Subject



This chart describes ACT College Readiness Benchmark attainment for 2014 high school graduates nationwide who have an interest in STEM majors or occupations. Characteristics of students with an interest in STEM will be addressed in greater depth with the upcoming *Condition of STEM 2014* report to be released November 2014.

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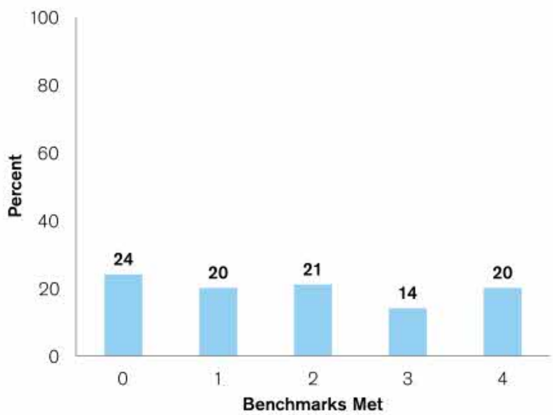
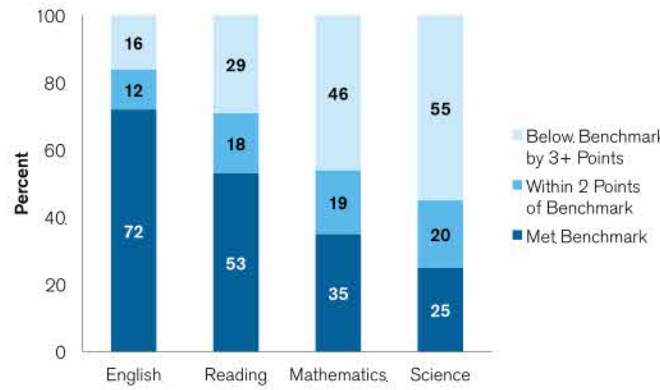
Early Preparation

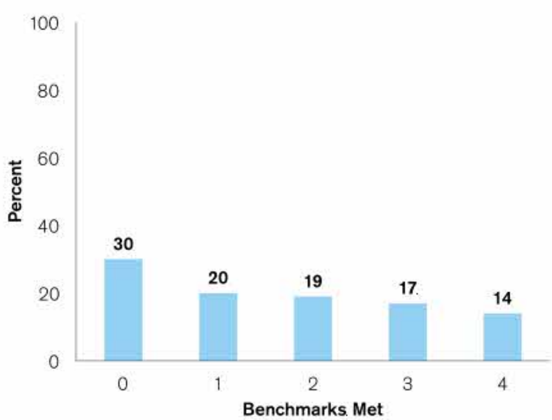
ACT research shows that younger students who take rigorous curricula are more prepared to graduate from high school ready for college or career. Moreover, our research (*The Forgotten Middle*, 2008) found that "the level of academic achievement that students attain by 8th grade has a larger impact on their college and career readiness by the time they graduate from high school than anything that happens academically in high school."

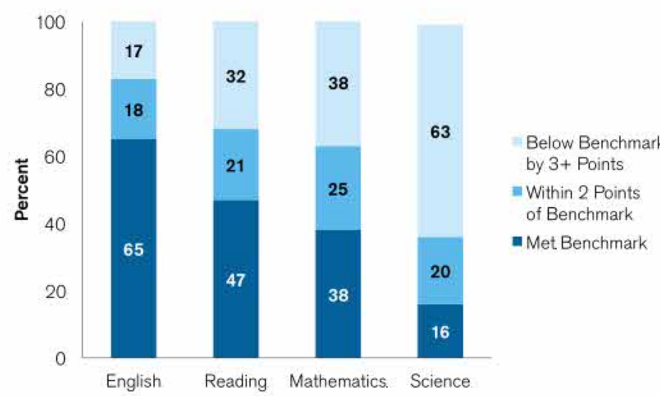
Percent of 2013–2014 ACT Plan®–Tested 10th Graders Meeting ACT College Readiness Benchmarks (N = 1,282,350)





Percent of 2013–2014 ACT Explore®–Tested 8th Graders Meeting ACT College Readiness Benchmarks (N = 1,011,462)





National

ACT College Readiness Benchmark Attainment for Top Planned College Majors: 2014 Graduates

When students register for the ACT, they can select a college major—from a list of 294 majors—that they plan to pursue in college. Among recent ACT-tested high school graduates nationwide, about 80% selected a specific planned major, whereas about 20% indicated that they were undecided or did not select a major.

This table ranks the nation's top (most frequently selected) majors among 2014 graduates. The percentages of students meeting the ACT College Readiness Benchmarks are shown for each major. Across these planned majors, there are considerable differences in the percentage of students who are ready to succeed in college.

Major Name	N	English	Reading	Math	Science	All Four
Undecided	264,009	69	49	48	41	31
No Major Indicated	126,748	33	20	16	14	9
Nursing, Registered (BS/RN)	80,120	58	33	28	24	14
Medicine (Pre-Medicine)	67,679	84	65	67	59	48
Business Administration and Management, General	50,777	65	42	45	36	25
Mechanical Engineering	34,322	70	51	64	53	41
Biology, General	31,775	82	63	64	57	45
Criminology	29,919	51	32	26	23	13
Law (Pre-Law)	27,571	64	47	42	36	27
Physical Therapy (Pre-Physical Therapy)	25,410	70	44	45	38	25
Accounting	24,058	68	43	57	42	29
Psychology, Clinical and Counseling	23,052	73	50	38	33	23
Engineering (Pre-Engineering), General	21,812	78	59	72	62	50
Computer Science and Programming	21,021	79	61	66	59	46
Athletic Training	19,604	57	33	33	27	16
Elementary Education	19,279	69	43	37	30	19
Pharmacy (Pre-Pharmacy)	18,905	76	52	58	48	34
Biochemistry and Biophysics	17,802	84	67	72	63	52
Psychology, General	17,373	77	57	48	42	31
Medical Assisting	16,165	41	22	19	15	8
Veterinary Medicine (Pre-Veterinarian)	14,978	69	48	42	38	26
Marketing Management and Research	14,590	72	49	50	40	28
Graphic Design	14,476	61	39	32	28	17
Aerospace/Aeronautical Engineering	14,092	83	65	76	66	54
Music, Performance	13,026	65	44	37	32	23
Health-Related Professions and Services, General	12,762	69	45	45	37	25
Music, General	12,671	63	40	34	30	21
Chemical Engineering	12,555	88	71	84	75	63
Computer Engineering	12,447	70	51	63	52	40
Civil Engineering	12,264	77	54	71	56	42

Note: *Undecided* and/or *No Major Indicated* are included in the table, if applicable. The former refers to students who selected the option *Undecided* from the list of majors. The latter refers to students who did not respond to the question.

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ACT College Readiness Benchmark Attainment for the Top Planned College Majors with Good Fit: 2014 Graduates

Many students gravitate toward majors that align with their preferred activities and values. ACT research has shown that greater *interest-major fit* is related to important student outcomes such as persistence in a major or college. This table shows, for each planned major, the numbers and percentages of students displaying good interest-major fit[4], as well as the percentages of students meeting the ACT College Readiness Benchmarks. Since only students who completed the ACT Interest Inventory during ACT registration are included here, this table shows results for a subset of the students in the prior table. These planned majors vary considerably in the percentage of students displaying good interest-major fit and meeting the ACT College Readiness Benchmarks. The results highlight the importance of examining multiple predictors of college success and affirm the value of a holistic view of college readiness.

Major Name	N Fit	% Fit	English	Reading	Math	Science	All Four
Undecided			No profile available				
No Major Indicated			No profile available				
Nursing, Registered (BS/RN)	24,197	30	65	39	33	29	17
Medicine (Pre-Medicine)	30,401	45	87	69	71	63	51
Business Administration and Management, General	16,535	33	68	45	49	39	27
Mechanical Engineering	10,461	30	72	53	66	57	43
Biology, General	14,955	47	85	67	66	60	48
Criminology	3,882	13	61	41	29	26	16
Law (Pre-Law)	9,236	33	75	57	49	43	33
Physical Therapy (Pre-Physical Therapy)	6,618	26	77	50	52	44	29
Accounting	12,757	53	70	44	60	44	30
Psychology, Clinical and Counseling	3,856	17	83	62	44	43	31
Engineering (Pre-Engineering), General	6,428	29	78	58	72	63	49
Computer Science and Programming	5,598	27	80	63	68	63	49
Athletic Training	3,574	18	67	39	39	34	20
Elementary Education	5,240	27	74	47	38	31	20
Pharmacy (Pre-Pharmacy)	7,118	38	81	56	64	53	39
Biochemistry and Biophysics	9,026	51	86	70	74	66	55
Psychology, General	4,002	23	85	66	51	48	36
Medical Assisting	3,834	24	46	24	25	19	10
Veterinary Medicine (Pre-Veterinarian)	5,680	38	75	54	48	46	32
Marketing Management and Research	4,192	29	78	55	53	43	31
Graphic Design	6,362	44	66	44	33	30	19
Aerospace/Aeronautical Engineering	4,598	33	85	68	79	70	57
Music, Performance	5,363	41	70	47	36	33	23
Health-Related Professions and Services, General			No profile available				
Music, General	5,450	43	70	46	36	33	22
Chemical Engineering	5,047	40	91	76	88	80	68
Computer Engineering	3,187	26	75	57	69	60	47
Civil Engineering	3,582	29	75	53	71	57	41

Note: *Undecided* and/or *No Major Indicated* are included in the table, if applicable. The former refers to students who selected the option *Undecided* from the list of majors. The latter refers to students who did not respond to the question.

ACT

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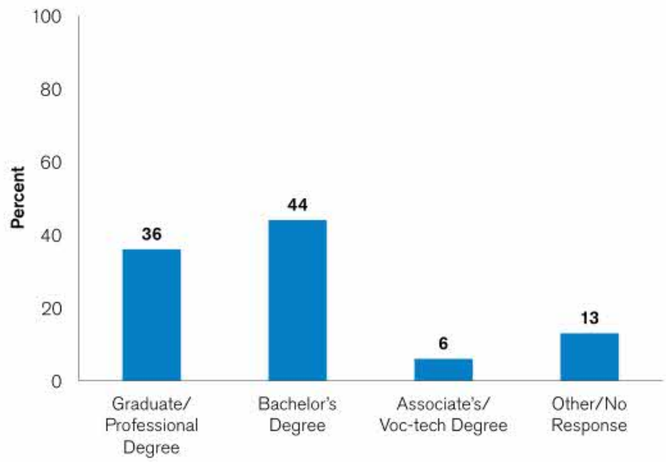
National

Other College and Career Readiness Factors

Percent of 2014 ACT-Tested High School Graduates by Educational Aspirations



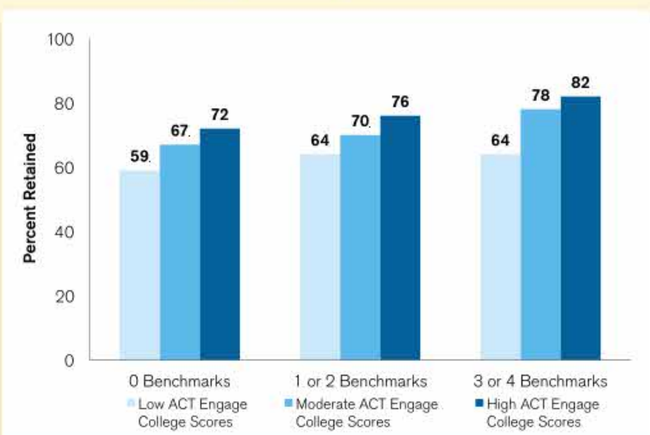
Aligning Student Behaviors, Planning, and Aspirations

Most students aspire to a post–high school credential. To help them meet those aspirations, educational planning, monitoring, and interventions must be aligned to their aspirations, begin early, and continue throughout their educational careers.

There is good news in that 86% of 2014 ACT-tested graduates aspired to postsecondary education. Interestingly, 87% of the national 2013 ACT-tested graduating class aspired to enroll in postsecondary education, compared to 69% who actually did enroll. If we fully closed the aspirational gap, an additional 314,831 of the nation's 2013 ACT-tested graduates would have enrolled in postsecondary education.

Academic Achievement, Behaviors, and College Retention

College Retention Rates by Number of ACT Benchmarks Met and ACT Engage® College Scores*



* Based on N = 13,697 ACT-tested graduates of 2011 and 2012 who also took the ACT Engage College assessment and enrolled in college. Students with a mean percentile score of less than 25 were classified as low, those with scores between 25 and 75 were classified as moderate, and those with scores greater than 75 were classified as high.

Across all ACT College Readiness Benchmark attainment levels, students with higher ACT Engage College scores (based on the mean percentile scores of ACT Engage scales Academic Discipline, Commitment to College, and Social Connection) remain enrolled in a postsecondary institution after the first year of college at substantially higher rates than students with lower ACT Engage College scores.

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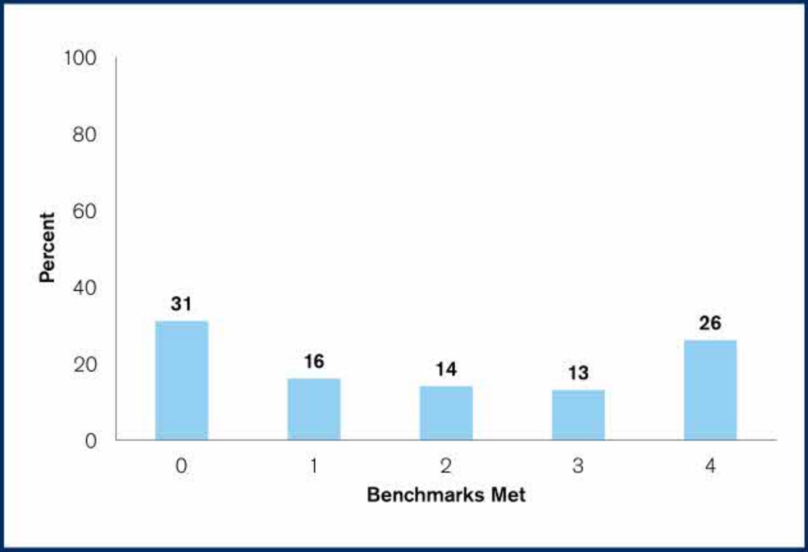
Looking Back at the Class of 2013

National

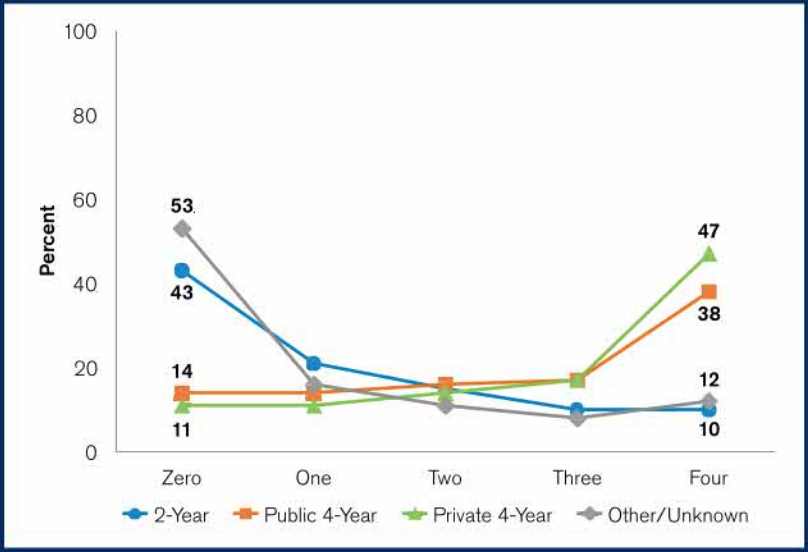
ACT College Readiness Benchmarks and Fall 2013 College Enrollment

Academic achievement, as measured by ACT College Readiness Benchmark attainment, has a clear and distinctive relationship with the path taken by high school graduates. Those who were more academically ready were more likely to enroll in 4-year institutions. Graduates who enrolled in 2-year colleges or pursued other options after high school were more likely to have met fewer Benchmarks. For the sizable number of 2013 graduates who did not meet any Benchmarks, their post–high school opportunities appear to have been limited compared to their college-ready peers.

Percent of 2013 ACT-Tested High School Graduates by Number of ACT College Readiness Benchmarks Attained



Percent of 2013 ACT-Tested High School Graduates by Number of ACT College Readiness Benchmarks Attained and Fall 2013 College Enrollment Status



National

2014 State Percent of High School Graduates Tested, Average Composite Score, and Percent Meeting Benchmarks by Subject

State	Percent of Graduates Tested*	Average Composite Score	Percent Meeting English Benchmark	Percent Meeting Reading Benchmark	Percent Meeting Math Benchmark	Percent Meeting Science Benchmark
Colorado	100	20.6	63	43	39	36
Illinois	100	20.7	62	41	41	35
Kentucky	100	19.9	59	37	31	29
Louisiana	100	19.2	56	32	27	24
Michigan	100	20.1	59	36	35	33
Mississippi	100	19.0	53	31	21	21
Montana	100	20.5	60	44	39	33
North Carolina	100	18.9	47	30	33	23
North Dakota	100	20.6	62	42	41	34
Tennessee	100	19.8	59	37	30	28
Utah	100	20.8	63	43	39	36
Wyoming	100	20.1	59	40	34	31
Arkansas	93	20.4	63	41	35	32
Hawaii	90	18.2	42	26	27	20
Nebraska	86	21.7	72	48	45	42
Florida	81	19.6	53	38	33	27
Alabama	80	20.6	65	43	31	31
South Dakota	78	21.9	72	51	52	46
Minnesota	76	22.9	77	56	61	53
Missouri	76	21.8	72	51	45	42
Kansas	75	22.0	72	51	50	44
Oklahoma	75	20.7	66	45	35	35
Wisconsin	73	22.2	75	51	54	49
Ohio	72	22.0	72	52	50	45
New Mexico	69	19.9	55	37	33	29
Iowa	68	22.0	75	52	48	47
West Virginia	65	20.6	68	45	31	32
South Carolina	58	20.4	61	41	39	33
Arizona	55	19.7	54	37	37	29
Georgia	53	20.8	64	44	38	34
Idaho	45	22.4	75	55	53	45
Indiana	40	21.9	70	51	52	42
Texas	40	20.9	60	42	47	36

2014 State Percent of High School Graduates Tested, Average Composite Score, and Percent Meeting Benchmarks by Subject

State	Percent of Graduates Tested*	Average Composite Score	Percent Meeting English Benchmark	Percent Meeting Reading Benchmark	Percent Meeting Math Benchmark	Percent Meeting Science Benchmark
Alaska	37	21.0	63	48	45	36
District of Columbia	37	21.6	61	47	47	41
Nevada	36	21.2	65	47	46	37
Oregon	36	21.4	67	49	47	40
California	29	22.3	71	51	57	43
Connecticut	29	24.2	86	65	69	59
Vermont	29	23.2	78	58	60	52
Virginia	28	22.8	76	58	57	49
New York	27	23.4	79	59	67	55
New Jersey	25	23.1	77	57	64	50
Massachusetts	23	24.3	85	65	72	58
Maryland	22	22.6	73	54	55	47
Washington	22	23.0	74	58	62	52
New Hampshire	20	24.2	86	66	69	59
Pennsylvania	19	22.7	75	55	59	49
Delaware	18	23.2	77	61	60	52
Rhode Island	16	22.9	77	60	59	48
Maine	9	23.6	84	61	65	53
National	57	21.0	64	44	43	37

* Totals for graduating seniors were obtained from *Knocking at the College Door: Projections of High School Graduates*, 8th edition. © December 2012 by the Western Interstate Commission for Higher Education.

Policies and Practices

How to Increase Readiness

Approximately 26% of all 2014 ACT-tested high school graduates met all four of the ACT College Readiness Benchmarks indicating academic readiness for credit-bearing first-year college courses in English Composition, College Algebra, Biology, and the social sciences. At the same time, 16% of all 2014 ACT-tested high school graduates met only one Benchmark, and 31% met none. Based on decades of ACT research, the following recommendations include steps that states, districts, schools, and classrooms can take to increase student readiness for college-level work.

State Policy Recommendations

Advance college and career readiness through a renewed focus on teaching and learning. With the majority of states and the District of Columbia having adopted more rigorous college and career readiness standards—and assessments to measure student progress toward those standards—it is more important than ever for state and local systems to align other educational elements to these standards. These elements include curriculum alignment to standards; experiential learning opportunities; and teacher professional development, especially as it relates to integrating the standards into current teaching practices and increasing assessment literacy. Research shows that systemic alignment of key policies and school activities empowers educators to support students in making notable gains in student achievement.

Set clear performance standards to evaluate college and career readiness. States must define performance standards so that everyone knows "how good is good enough" for students to have a reasonable chance of success at college or on the job. ACT defines college readiness in English, reading, math, and science using decades of student performance data. For each area, students who are considered college ready have a 50% chance of earning a B or higher or about a 75% chance of earning a C or higher in the corresponding first-year English Composition, introductory social science, College Algebra, or Biology course. Longitudinal, real-world data and research on what constitutes student success are now available to every state and district, as are standards and benchmarks against which the performance of students and schools can be measured and state progress noted.

Implement a high-quality student assessment system. As states adopt and implement new high-quality assessment systems, they should ensure that those systems measure and provide timely and actionable information about student performance aligned to college and career readiness. High-quality assessments must:

- Monitor growth over a student's educational experience, starting in elementary school and through high school, so that educators can make timely instructional decisions and interventions based on reliable information.
- Be aligned, linked, and longitudinal in nature to be an effective tool for students, teachers, administrators, and parents in monitoring student progress.
- Be mindful of and incorporate the unique accessibility needs of English language learners and students with disabilities, and the tests must be constructed in deep consultation with experts on these populations.
- Vary according to the type of standards that need to be measured. These multiple measures can be used to offer more comprehensive evaluations of student achievement, from multiple-choice and constructed-response assessments to performance tasks and project-based learning.
- Be offered through multiple platforms. While computer-based testing is highly applicable to formative assessments that can be conducted on an on-demand basis, paper-and-pencil testing may be a reality for states and districts with less technological capacity. Until computer and broadband access for such large groups of students are sufficiently widespread in schools, both platforms must be available.
- Offer multiple stakeholders—especially teachers—ongoing, real-time, interactive reporting and access to assessment results and other related data.

These principles are consistent with the goals of other principles for high-quality college and career readiness assessments set forth by experts in the field.[5]

Support programs targeted at developing behaviors that aid students' academic success. Monitoring students' academic performance is critical, but certain academically related behaviors also contribute to student persistence and success. If students are to be successful in meeting a core set of academic standards, they need to be sufficiently motivated to persist at their work. The behavioral habits that contribute most directly to student postsecondary success include motivation, social engagement, and self-regulation.[6] Measuring these and other academically related factors is possible, and doing so can assess risk at important points in students' academic trajectories and identify areas of need and support.[7] Cultivating behavioral habits that contribute to postsecondary and workforce achievement can have a noticeable impact on students' achievement and persistence levels.

Provide all students with access to a rigorous high school core curriculum. While in recent years, most states have increased course requirements for high school graduation, too often those requirements have not specified the particular courses that prepare students for postsecondary success. In the absence of such specific and

Policies and Practices

rigorous high school graduation requirements, too many students are not taking either the right number or the right kinds of courses they need to be ready for college and career. All states, therefore, should specify the number and kinds of courses that students need to take to graduate academically ready for life after high school. At minimum, ACT recommends the following:

- Four years of English
- Three years of mathematics, including rigorous courses in Algebra I, Geometry, and Algebra II
- Three years of science, including rigorous courses in Biology, Chemistry, and Physics
- Three years of social studies

Invest in early childhood education programs so that more children are ready to learn. Improving college and career readiness for all students begins as early as kindergarten—where gaps between low-income students and their more advantaged peers already exist.[8] Large numbers of underserved students enter kindergarten behind academically in early reading and mathematics skills, oral language development, vocabulary, and general knowledge. Gaps also exist in the development of academic and social behaviors such as listening, following instructions, and resolving conflicts. States should not only continue to invest in, but also expand access to, high-quality, research-based early learning opportunities for *all* students from prekindergarten to third grade to address learning gaps well before eighth grade, by which time these gaps become much more difficult to reverse.

Continue to implement monitoring and early warning systems that help educators identify and intervene with at-risk students. An effective monitoring system should provide an evolving picture of students over time and identify their unique learning needs at various points along their educational careers. Adoption of such systems in states where they do not yet exist—as well as expansion of system capabilities in states where they currently exist—will support earlier and more effective interventions by providing teachers with information to implement the necessary interventions to maximize student potential. Teachers, who have been consistently identified as the most important school-based factor in student achievement, should be equipped with as much relevant data as possible to inform and supplement their efforts.[9] The data should help to identify students in need of intervention and model student growth toward college and career readiness.

Continue development of thoughtful and fair teacher evaluation systems that include multiple measures of performance—including student growth data. To help ensure that teachers and administrators have access to relevant feedback about their effectiveness at preparing all students for college and career, it is critical to offer continued support for developing and implementing robust teacher evaluation systems that include multiple measures of performance. Such development and implementation must proceed thoughtfully and be accompanied by education and communication about the appropriate use of student growth data in these systems.

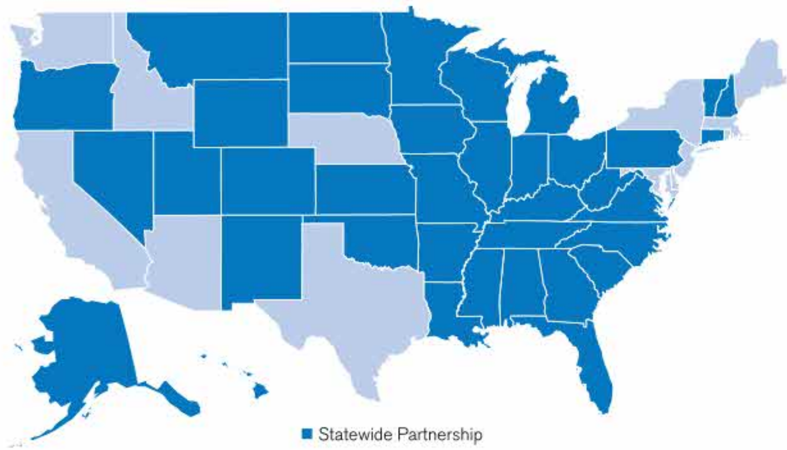
Increase support for the development of STEM-related courses to meet the coming demand for a larger STEM workforce. Education in science, technology, engineering, and mathematics (STEM) is vital to the ability of the United States to maintain its position of global leadership and economic competitiveness. With more than 8.6 million STEM-related jobs anticipated by the year 2018, preparing and encouraging students to pursue STEM majors and careers becomes even more important. To identify new programs that will better attract students to and retain them in STEM-related careers, states should seek opportunities to collaborate with multiple entities, including business; national workforce and job readiness groups; local chambers of commerce; and universities, community colleges, and technical schools.

Implement policies for data-driven decision making. Teachers must have access to high-quality, actionable data that can be used to improve instruction. Without such data, opinion can overly influence key instructional decisions. To address this challenge, states have been hard at work developing longitudinal P–16 data systems. This work should continue, but more must be done. To ensure that students are prepared for the 21st century, states must have systems that allow schools and districts to closely monitor student performance at every stage of the learning pipeline, from preschool through college. Policies governing teacher and administrator preparation and professional development must include an emphasis on developing skills to use data appropriately to improve the practices of teaching and learning for all students in the pipeline.

Resources

Statewide Partnerships in College and Career Readiness

States that incorporate ACT's college and career readiness solutions as part of their statewide assessments provide greater access to higher education and increase the likelihood of student success in postsecondary education. Educators also have the ability to establish a longitudinal plan using ACT's assessments, which provide high schools, districts, and states with unique student-level data that can be used for effective student intervention plans.



State administration of ACT's programs and services:

- Increases opportunities for minority and middle- to low-income students.
- Promotes student educational and career planning.
- Reduces the need for remediation.
- Correlates with increases in college enrollment, persistence, and student success.
- Aligns with state standards.

ACT Aspire 3rd- through 8th-grade students	ACT Explore 8th- and 9th-grade students	ACT Plan 10th-grade students	The ACT 11th- and 12th-grade students	ACT QualityCore 8th- through 12th-grade students	ACT WorkKeys 11th- and 12th-grade students	ACT National Career Readiness Certificate™	
Alabama	Alabama	Alabama	Alabama	Alabama	Alaska	Alabama	New Mexico
	Arkansas	Arkansas	Arkansas*	Kentucky	Illinois	Alaska	North Carolina
	Hawaii	Florida	Colorado		Hawaii	Arkansas	North Dakota
	Illinois	Hawaii	Hawaii		Michigan	Colorado	Ohio
	Kentucky	Illinois	Illinois		North Carolina	Connecticut	Oklahoma
	Louisiana	Kentucky	Kentucky		North Dakota	Florida	Oregon
	Michigan	Louisiana	Louisiana		Wyoming	Georgia	Pennsylvania
	Minnesota	Michigan	Michigan			Indiana	South Carolina
	North Carolina	Minnesota	Minnesota*			Iowa	South Dakota
	Oklahoma	New Mexico	Mississippi*			Kansas	Tennessee
	South Carolina	North Carolina	Missouri*			Kentucky	Vermont
	Tennessee	Oklahoma	Montana			Louisiana	Virginia
	Utah	Tennessee	Nevada*			Michigan	West Virginia
	West Virginia	Utah	North Carolina			Minnesota	Wisconsin
	Wyoming	West Virginia	North Dakota			Mississippi	Wyoming
		Wyoming	Tennessee			Missouri	
			Utah			Montana	
			Wisconsin*			New Hampshire	
			Wyoming				

* Indicates a state offering statewide testing in the 2014–15 academic year.

ACT Research

The continued increase of test takers enhances the breadth and depth of the data pool, providing a comprehensive picture of the current college readiness levels of the graduating class as well as offering a glimpse of the emerging national educational pipeline. It also allows us to review various aspects of the ACT-tested graduating class, including the following reports:

Releasing in the 2014–2015 Academic Year

- *The Condition of STEM 2014*
- *The Condition of College & Career Readiness—African American Students*
- *The Condition of College & Career Readiness—American Indian Students*
- *The Condition of College & Career Readiness—Asian Students*
- *The Condition of College & Career Readiness—Hispanic Students*
- *The Condition of College & Career Readiness—Pacific Islander Students*
- *The Condition of College & Career Readiness—First-Generation Students*
- *The Condition of College & Career Readiness—Students from Low-Income Families*

Other ACT Research Reports

College Choice Report (for the graduating class of 2012)

- *Part 1: Preferences and Prospects*—November 2012
- *Part 2: Enrollment Patterns*—July 2013
- *Part 3: Persistence and Transfer*—April 2014

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- *Part 3: Persistence and Transfer*—April 2015

To be notified of exact release dates, please subscribe here: **www.act.org/research/subscribe.html**.

How Does ACT Determine if Students Are College Ready?

The ACT College Readiness Benchmarks are scores on the ACT subject area tests that represent the level of achievement required for students to have a 50% chance of obtaining a B or higher or about a 75% chance of obtaining a C or higher in corresponding credit-bearing first-year college courses. Based on a nationally stratified sample, the Benchmarks are median course placement values for these institutions and represent a typical set of expectations. ACT College Readiness Benchmarks were revised for 2013 graduating class reporting. The ACT College Readiness Benchmarks are:

College Course	Subject Area Test	Original ACT College Readiness Benchmark	Revised ACT College Readiness Benchmark
English Composition	English	18	18
Social Sciences	Reading	21	22
College Algebra	Mathematics	22	22
Biology	Science	24	23

Notes

1. The data presented herein are based on the *ACT Profile Report—State: Graduating Class 2014* for each respective state, accessible at **www.act.org/readiness/2014**. With the exception of the top graph on page 6, data related to students who did not provide information or who responded "Other" to questions about gender, race/ethnicity, high school curriculum, etc., are not presented explicitly.
2. The race/ethnicity categories changed in 2011 to reflect updated US Department of Education reporting requirements; trends to previous reports may not be available for all race/ethnicity categories.
3. Data reflect subject-specific curriculum. For example, English "Core or More" results pertain to students who took at least four years of English, regardless of courses taken in other subject areas.
4. The interest-major fit score measures the strength of the relationship between the student's profile of ACT Interest Inventory scores and the profile of students' interests in the major shown. Interest profiles for majors are based on a national sample of undergraduate students with a declared major and a GPA of at least 2.0. Major was determined in the third year for students in 4-year colleges and in the second year for students in 2-year colleges. Interest-major fit scores range from 0–99, with values of 80 and higher indicating good fit.
5. See, for example, Council of Chief State School Officers, *Transition to High-Quality, College- and Career-Ready Assessments: Principles to Guide State Leadership and Federal Requirements* (Washington, DC: Council of Chief State School Officers, May 23, 2013), http://www.ccsso.org/Documents/2013/CCSSO_State_Principles_on_Assessment_Transition_5-23-13.pdf; and Linda Darling-Hammond et al., *Criteria for High-Quality Assessment* (Stanford, CA: Stanford Center for Opportunity Policy in Education, June 2013), https://edpolicy.stanford.edu/sites/default/files/publications/criteria-higher-quality-assessment_2.pdf.
6. ACT, *Enhancing College and Career Readiness and Success: The Role of Academic Behaviors* (Iowa City, IA: ACT), http://www.act.org/engage/pdf/ENGAGE_Issue_Brief.pdf.
7. ACT, *Importance of Student Self-Regulation* (Iowa City, IA: ACT, January 2013), http://www.act.org/research/researchers/briefs/pdf/2013-3.pdf.
8. Chrys Dougherty, *College and Career Readiness: The Importance of Early Learning Success* (Iowa City, IA: ACT, February 2013), http://www.act.org/research/policymakers/pdf/ImportanceofEarlyLearning.pdf.

Daniel F. McCaffrey, J.R. Lockwood, Daniel M. Koretz, and Laura S. Hamilton, *Evaluating Value-Added Models for Teacher Accountability* (Santa Monica, CA: RAND Corporation, 2003), http://www.rand.org/content/dam/rand/pubs/monographs/2004/RAND_MG158.pdf.

ACT is an independent, nonprofit organization that provides assessment, research, information, and program management services in the broad areas of education and workforce development. Each year, we serve millions of people in high schools, colleges, professional associations, businesses, and government agencies, nationally and internationally. Though designed to meet a wide array of needs, all ACT programs and services have one guiding purpose—helping people achieve education and workplace success.

A copy of this report can be found at
www.act.org/readiness/2014

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