SC EDUCATION OVERSIGHT COMMITTEE
Reporting facts. Measuring change. Promoting progress.

Education Oversight Committee
August 3-4, 2015
Francis Marion Hotel
Charleston, SC

AGENDA

Monday, August 3, 2015

11:00	Welcome and Introductions Approval of Minutes of June 8, 2015 Tentative Meeting Schedule for 2015-16	David Whittemore
11:15	Overview of Retreat Agenda	Melanie Barton
11:30	Early Readiness Assessment Results, 2014-15 Dr. Bill Brown and USC Research Team	
12:30	Working Lunch	
1:30	Career Readiness and Accountability Lewis Gossett, President & CEO of SC Manufacturers Alliance STEM Premier® Initiative Representatives from SCANA and other Manufacturers	
4:00	Adjourn – Check In at the Hotel	
6:00	Dinner To Be Determined	

Tuesday, August 4, 2015

Breakfast on your own using vouchers

8:30 a.m. Accountability – Combining Federal and State Systems and Creating Accountability for 21st Century

Special Guests:
Dr. Terry Holiday
Commissioner of Education, Kentucky

Dr. Gerrita Postlewait
Superintendent, Charleston County School District

11:00 2015-16 EOC Objectives Melanie Barton

Noon Adjourn

SOUTH CAROLINA EDUCATION OVERSIGHT COMMITTEE
Minutes of the Meeting
June 8, 2015

Members in Attendance: David Whittemore (Chair); Dr. Danny Merck (Vice-Chair); Anne Bull; Dr. Bob Couch; Sen. Mike Fair; Rep. Raye Felder; Mrs. Margaret Anne Gaffney; Barbara Hairfield; Sen. Wes Hayes; Rep. Dwight Loftis; Deb Marks; Sen. John Matthews; Neil Robinson; The Honorable Molly Spearman; and Patti Tate

EOC Staff Present: Dr. Kevin Andrews; Mrs. Melanie Barton; Ms. Paulette Geiger; Ms. Bunnie Ward; and Ms. Dana Yow.

Mr. Whittemore called the meeting to order.

The minutes of March 9, 2015 meeting were amended to correct a typographical error and then approved.

Mr. Whittemore introduced Brenda Campbell, Principal of Saluda Trail Middle School in Rock Hill, a 2014 Exemplar School by the Partnership for 21st Century Skills and TransformSC school. Ms. Campbell thanked the EOC for its support of innovation in public schools. She discussed the integration of the school from an International Baccalaureate School to a STEM school with an arts integration over the past three years. Saluda Trail is engaged in project-based learning with much involvement of the local community in assisting students in collaboration on real-world issues and applications. For example, over 450 individuals from the school participated in a school health fair that was organized and led by the 7th grade students. Ms. Spearman applauded Ms. Campbell on her leadership and the school's achievements.

Then Mr. Whittemore recognized Joe Waters, Vice President, of the Institute for Child Success. Mr. Waters congratulated the EOC on being named as a 2015 Champion for Children award recipient for its work on behalf of improving early literacy and early readiness. The Beaufort County School District was also a recipient. The EOC will be recognized at its research symposium on October. Mr. Whittemore thanked Mr. Waters for the recognition and expressed his hope that many EOC members would be able to attend the October meeting.

Mr. Whittemore asked Ritchie Tidwell and Dr. Joann Cox of Tidwell & Associates to provide an overview of the results of the district efficiency studies. The General Assembly appropriated $300,000 to the EOC in one-time funds in Fiscal Year 2014-15 to conduct at least three district efficiency studies. Tidwell & Associates was selected through the State Procurement Process to complete the studies which involved four of ten districts that volunteered to participate. The four districts in the study were Barnwell 19, Clarendon 1, Lexington 4 and Dorchester 2. Mr. Tidwell and Dr. Cox described the process used in collecting data and local stakeholder input. The recommendations are listed in tiers with Tier 1 being recommendations that need the most immediate attention. The evaluators noted some recurring themes including the need for: (1) more training of local school board members, especially in policy development; (2) shared central office services; (3) more insurance for breaches in data and technology; and (4) greater assistance from the Department of Education regarding technology.

EOC members then were given an opportunity to ask questions. Mr. Robinson asked about the degree to which the local district or local school board had resisted any of the facts and findings. Dr. Cox responded that she had met with the majority of the superintendents and board

members to review the facts and findings. To date, all had concurred with the facts and findings of the report. She noted that the remaining visits would be conducted this week and then the final reports submitted to the EOC. Mrs. Spearman agreed that many of the smaller districts in the state need more technical assistance and support from the Department, which is a goal of her agency. She noted that there are funds in the new state budget to provide more technological assistance to districts. She expressed her desire to have time to review the reports and provide additional feedback to the EOC at a later point in time.

Subcommittees then reported accordingly.

Academic Standards and Assessment - Dr. Merck reported that the subcommittee met earlier in the day to discuss with the staff of the Department of Education a draft request for proposal regarding assessments to be administered in English language arts and mathematics in grades 3 through 8 in school year 2015-16 and a college readiness assessment in grade 11. A proviso pending in the state budget requires the EOC provide consultation to the Department in the design of the request for proposal. The subcommittee is bringing before the full EOC today its formal, written recommendations that emphasize the need to align better the request for proposal to Acts 155 and 200 of 2014. The subcommittee is proposing specific changes in the request for proposal. Mr. Robinson encouraged the full EOC to adopt the recommendations to guarantee that the assessments procured serve the specific statutory requirements. There being no additional discussion, the EOC unanimously adopted the recommendations.

EIA and Improvement Mechanisms – Dr. Couch, the new subcommittee chair, informed the full committee that the subcommittee met on May 18, 2015 and is bringing forth one information item and two action items. The first, an information item, is an update on the Fiscal Year 2015-16 budget. He called upon Mrs. Barton to give an overview. Mrs. Barton noted that the annual appropriation bill, H.3701, is currently being debated by the budget conference committee. Both the Senate and House funded:

- EFA at a base student cost of $2,220, or a $100 increase over the current year. There are $7.6 million in transition funds to guarantee that no district receives fewer funds in the upcoming fiscal year than in the prior fiscal year.
- Read to Succeed Office as well as an increase of $4.9million for Reading Coaches. The appropriation for Summer Reading Camps was increased by $1.5 million to $7.5 million for the upcoming year.
- Regarding the Education Improvement Act (EIA) budget, there was over $2.0 million in increased funding for vocational equipment and for connectivity ($2.1 million).
- The House and Senate also authorized funding of $1.5 million for Reach Out and Read to serve all children participating in the Medicaid program.

When the budget and provisos are finalized, EOC staff will provide additional information to the EOC.

Dr. Couch then referred to the next item, the Annual Report on the SC Techer Loan Program, which comes as a recommendation of the subcommittee. The key findings were as follows:

- The gap between the number of teachers leaving the classroom and the number graduating from a SC teacher education program is growing. This growing gap is also occurring throughout the United States.

- The number of applications to the Teacher Loan Program delinked for the second consecutive fiscal year.
- For the first time since 1986-87 no funds were used from the Revolving Loan Fund to supplement the EIA appropriation. And, in fact, the EIA appropriation of $5.1 million had a balance of $241,926 at the end of the fiscal year.

The Subcommittee recommends that the General Assembly consider a tiered loan forgiveness program to allow a teacher to have his or her loan forgiven if the loan recipient works in any public schools with a shorter period of loan forgiveness if the teacher teaches in a geographic and/critical need areas. In addition, the subcommittee recommends that the Teacher Loan Advisory Committee and CERRAA continue efforts to engage education partners in publicizing the Teacher Loan Program. Finally, the subcommittee recommends that the EOC adopt the report and forward it to the General Assembly and to the House and Senate task forces looking at the Abbeville Equity lawsuit. According to Dr. Couch, clearly, there is a larger teacher recruitment and retention problem impacting our state that will only be exacerbated in the rural, districts of our state.

Rep. Loftis and Mrs. Hairfield discussed issues related to recruiting and retaining teachers in rural areas of the state including salary, housing, student loan debt, and access to amenities. Rep. Felder noted that expanding the mentoring program to new teachers beyond the first year of teaching would increase the retention of teachers. Sen. Hayes clarified that the teacher pipeline study is still in the budget. Sen. Matthews noted that economics have a significant impact on young people's career decisions.

There being no further discussion, the committee voted unanimously to adopt the report

Dr. Couch then turned to the final item, the *Results of the 2014 Parent Survey***,** which comes as a recommendation of the subcommittee to the full EOC. While the number of parent surveys completed and returned declined by 11.2 percent from the prior year, parent satisfaction with the learning environment, social and physical environment and home and school relations at their child's school remained consistent with the results of prior year's surveys. One possible reason for the decline in surveys returned was the fact that the survey was administered later in the fiscal year, with the window of administration including Spring break for some school districts.

The report also provides information on the Gallup Student Survey. At least one school district in our state, Spartanburg 7, had its 5th through 12th graders take the free, online survey that measures the Hope, Engagement and Well-Being of students. The EOC is encouraging districts to participate this fall in the survey. All community block grant recipients are required to conduct the survey as part of the evaluation of this initiative.

Again, the subcommittee recommends that the EOC adopt the report.

There being no questions or discussion, the committee voted unanimously to adopt the report.

Early Readiness Assessment – Mrs. Hairfield discussed EOC's report that addressed the selection and implementation of a readiness assessment for kindergartners. First Steps Reauthorization requires the EOC to recommend by July 1, 2015 to State Board of Education an assessment to evaluate and measure school readiness of students prior to entry into a pre-kindergarten or kindergarten program. State law also mandates a comprehensive readiness assessment for all developmental domains be established for the 2016-17 school year. Currently, state law requires a readiness assessment for language and literacy only. In order to meet this requirement, the EOC established the Early Readiness Assessment Subcommittee. This subcommittee convened four times from November 2014 through May 2015. The EOC also convened a working group April 13 to discuss local assessment practices, assessments currently used in districts, and the EOC framework that was developed by staff. About 25 professionals representing Head Start, private childcare centers, First Steps, early education research, and schools districts were invited and/or participated April 13. Appendix G in the report includes a list of the working group participants.

Mrs. Hairfield noted that the report includes the following components:

- A synopsis of the various developmental domains that are specifically listed in the state laws, including social and emotional, approaches to learning, language and literacy development, cognitive and mathematics development, and physical health and motor skills.
- The EOC Kindergarten Readiness Assessment Framework, which provides specific examples of skills children entering kindergarten should possess. This Framework connects these developmental skills to the Profile of the South Carolina Graduate and to Kindergarten ELA and math standards.
- Discussion of specific assessments that measure the quality of adult-child interactions. In previous reports, the EOC has reported on strategies to improve the quality of early childhood programming by focusing on the quality of the teacher child interaction.
- Specific 4K language and literacy assessments that were discussed during the April 13 working group are also detailed in Finding 1 of the report on page 32. My IGDIS is currently used by Charleston County School District. Head Start uses Teaching Strategies GOLD. Other assessments addressed include: ELSA, PALS Pre-K and the mCLASS:CIRCLE. A pending proviso would allow the Department of Education to select up to three language and literacy assessments so that publicly-funded 4K programs could choose one to administer to their children during the 2015-16 school year.

Ms. Hairfield also addressed the report recommendations:

- The Department of Education and First Steps should first consider assessments that are currently being used by early education programs for inclusion in the three assessments that will be endorsed by the Department.
- The physical health status of children (physical, vision, dental care) should be collected as part of a comprehensive readiness assessment so that children may be linked to health services if they currently do not access them on a regular basis.

- The voice of local school districts, teachers and school leaders should be considered during the selection of assessments.
- Assessment should also include ongoing teacher observations, work samples and performance-based tasks so teachers can obtain the fullest picture of a child's ability and progress.
- The inclusion of performance-based tasks should be considered so teachers can determine how individual children learn best. In later grades, the process of learning is more evident. For example students in math are often required to "show their work" in determining an answer.
- A formal, continuous standards alignment and assessment process for early education should be established. The State Board of Education should formally adopt the SC Early Learning Standards to ensure they are aligned with 5K content standards.
- Finally, to improve the quality of instruction for young students, the General Assembly should support creative, evidence-based approaches. A pilot program would encourage innovative approaches to measuring and improving quality, such as the enhancement of teacher-child interaction in classroom settings.

Rep. Loftis asked who would complete the physical well-being checklist. Mrs. Barton and Mrs. Ward responded that it could be a school nurse or other trained individual at the school. Mrs. Marks asked if the subcommittee had considered allowing parents to opt out of any portion of the readiness assessment, especially the social and emotional assessment. Mrs. Ward referred Mrs. Marks to the Table 6 of the report that addresses the skills under each domain. Under social and emotional, teachers would determine whether students: (1)show initiative by making choices and accepting responsibility; (2) adjust well to changes in routines and environments; (3) express emotions and needs through appropriate words and actions; (4) treat others with respect in words and actions; (5) show caring for others; (6) follow directions and school rules; (7) respect the property of others; (8) work and play cooperatively with others; and (9) interact easily with familiar adults. Mrs. Ward also noted that social and emotional screenings may also indicate whether children need further evaluation for autism.

Public Awareness – Mrs. Hairfield reported on two action items and two information items. First, the Public Awareness met on May 18 and recommended revised district and school report cards for the 2015 release of the State Report Cards. Mrs. Hairfield recommended that the report card format as recommended by the subcommittee be further amended to clarify that the "social sciences" of the Profile of the South Carolina Graduate be amended to reflect 21st century core courses in social sciences. Rep. Loftis asked if the staff would look into ways to incorporate into the accountability system a measure to determine compliance with or implementation with the EEDA law of 2005. There being no further debate, the recommendation as amended was approved unanimously.

The second item, the development of a single accountability system with public engagement, was approved as submitted. The EOC in the first half of 2016 will engage local stakeholders in determining the format for and information needed in a consolidated report card. There being no questions, he recommendation was approved unanimously.

Finally, Mrs. Hairfield described the status of two publications, the student reading success activity guide and the family-friendly standards. These will be released this summer and upcoming year, respectively, to provide assistance to educators, parents, and communities.

The staff provided information to the EOC members on the annual retreat which will be held at the Francis Marion Hotel in Charleston, SC on August 3 and 4.

There being no further business, the meeting was adjourned.

SC EDUCATION OVERSIGHT COMMITTEE

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For questions or additional information, contact us at:
803.734.6148 or
www.eoc.sc.gov

2015 Legislative Summary

Investments in Education Accountability and Improvement

The General Assembly in the state budget for Fiscal Year 2015-16 expanded its focus on: (1) increasing the base student cost; (2) improving student reading proficiency; (3) addressing technology needs; and (4) recruitment and retention of teachers.

Education Finance Act (EFA) – The EFA is funded with a base student cost of $2,220, an increase of $100 above the prior year's funding level.

Reading – The legislature funded key components of the Read to Succeed legislation at increased levels:

- Summer Reading Camps at $7.5 million, an increase of $1.5 million
- Reading Coaches at $34.4 million, an increase of $4.9 million
- Funding of Reach Out and Read at $1.5 million to serve all Medicaid enrolled children. The program trains doctors, nurse practitioners and other medical professionals to work with families on importance of and techniques to read aloud with their child. The program also provides medical staff with age-appropriate books to give to the child at the visit.
- Funding of Save the Children at $1.3 million to expand early child visits focused on literacy in rural and underperforming school districts. The program currently serves over 6,000 children in 15 communities in 6 counties. The Early Steps to School Success Program assists children from birth to age 5 and their parents with developing kills and knowledge to succeed. The Literacy Programs provides children in kindergarten through grade 6 with additional support.

Technology – The General Assembly addressed technology needs in schools accordingly:

- Funded connectivity at $12.3 million, an increase of $1.2 million
- Continued funding out of lottery revenues $29.3 million for technology to improve external and internal connections and develop one-to-one computing initiatives
- Professional development for teachers in the use of technology in instruction at $4.0 million

Teachers – Nationally and in South Carolina, there is a decline in the number of individuals pursuing teaching as a career. Consequently, the General Assembly created the following to begin to address the issue:

Teacher Salary Schedule Structure Study Committee - The Department of Education is required to convene stakeholders to examine and make recommendations by November 15, 2015 regarding changes to statewide minimum state teacher salary schedule.

Rural Teacher Recruiting Incentive **–** An additional $1.5 million was appropriated to the Center for Educator Recruitment, Retention and Advancement (CERRA) to develop incentives including, but not limited to, salary supplements, education subsidies, professional development, and mentorship to be provided to classroom educators that offer instructional services in districts that have greater than a 12% average annual teacher turnover rate. The incentives and implementation are to be developed in consultation with the State Department of Education and the Education Oversight Committee.

Teacher Pipeline - CERRA, in concert with the Commission on Higher Education, the Department of Education, and the EOC, will conduct a study to identify and project the number of additional teachers needed annually in public school classrooms for grades K5 through 12, for school years beginning 2017 through 2027. The purpose of the study shall be to: (1) provide specific data and projections on the number of teachers expected to be needed as compared to the number available, by Subject Areas Taught as indicated in CERRA's annual Supply and Demand Report, and with a focus on critical need subject areas; (2) determine whether, individually and collectively, teaching programs at applicable institutions of higher learning in South Carolina have the capacity and infrastructure to fulfill projected needs in item (1); and (3) provide data for general use in estimating the fiscal impact of any new or revised programs being considered to incent more talented individuals to enter teacher training programs and more highly qualified teachers to remain in the profession for longer periods of time

Statewide Assessment - The legislature appropriated an additional $7.3 million to the Department of Education to cover the cost of WorkKeys, which is administered to all students in grade 11 and additional costs related to implementation of Acts 155 and 200 of 2014. The Department of Education will issue a request for proposal for assessments for college readiness in grade 11 and for summative assessments in grades 3 through 8 in English language arts and mathematics. Per the proviso, the EOC has already formally submitted recommendations to the State Board and Department on the issue.

Early Childhood Education – The full-day 4K program for at-risk children will expand from 60 to 64 school districts in 2015-16. The districts of Anderson 2, Anderson 5, Greenwood 52 and Kershaw now have a poverty index of 70% or greater and children residing in these districts are eligible to participate in the program in either a private center or public school. The General Assembly also directed $2.0 million in available funds for the program to expand high-quality early childhood programs in the state through a competitive grants process administered by the EOC.

EDUCATION ACCOUNTABILITY ACT APPROPRIATIONS SINCE FY12*

EAA ITEM	FY12	FY13	FY14	FY15	FY16
Technical Assistance	6,000,000	5,250,000	6,000,000	8,800,000	8,800,000
External Review Teams					
Assessment	21,665,119	24,761,400	24,761,400	27,261,400	34,561,400
Formative Assessment	3,096,281				
Professional Development	6,515,911	5,515,911	5,515,911	5,515,911	5,515,911
Palmetto Gold and Silver Awards **	2,230,061				
Report Card Printing & Development	722,385				
Power Schools/Data Collection	5,000,000	5,000,000	7,500,000	7,500,000	7,500,000
Education Oversight Committee/ SC Autism Society ($500,000)	1,193,242	1,193,242	1,293,242	1,643,242	1,793,242
SCDE Personal Service	1,236,436	1,236,436	1,236,436	1,236,436	1,236,436
SCDE Other Operating	1,174,752	1,174,752	1,174,752	1,174,752	1,174,752
Students at Risk of School Failure ***	136,163,204	136,163,204	136,163,204	79,551,723	79,551,723
TOTAL EAA:	**$184,997,391**	**$180,294,945**	**$183,644,945**	**$132,683,464**	**$140,133,464**
OTHER SUPPORTING PROGRAMS:					
K-5 Reading, Math, Science & Social Studies ****	29,491,798	29,491,798	27,891,798	27,891,798	
6-8 Reading, Math, Science and Social Studies ****	2,000,000	2,000,000	2,000,000	2,000,000	
High School Reading	729,340				
Young Adult Education (30% of Adult Education)	4,072,121	4,072,121	4,072,121	4,072,121	4,522,121
Reading	6,542,052	6,542,052	6,542,052	6,542,052	6,542,052
Summer Reading Camps			1,500,000	6,000,000	7,500,000
Aid to Districts	68,250,835	37,736,600	37,736,600	37,736,600	37,386,600
Reading Coaches				29,483,100	34,444,378
TOTAL OTHER:	**$111,086,146**	**$79,842,571**	**$79,742,571**	**$113,725,671**	**$90,395,151**
GRAND TOTAL:	**$296,083,537**	**$260,137,516**	**$263,387,516**	**$246,409,135**	**$230,528,615**

***** Includes all recurring and nonrecurring General Fund, EIA, and lottery revenues but excludes federal funds for testing. Line items in italics denote the suspension of the entire program or a portion of the program for other purposes (writing assessment suspended in grades 3, 4, 6 and 7; suspension of report card printing; etc.). All line item appropriations for the EOC were consolidated, and appropriations for data collection and unique student identifier were consolidated into PowerSchool.

** For FY11 and FY12, the funds appropriated for the program were either suspended or reallocated.

*** For FY15, $59.6 million was reduced from the Students at Risk of School Failure appropriation because a poverty index was added to the EFA.

****For FY16, these funds were allocated through the EFA.

Legislation Impacting Public Education and Accountability

Bills Enacted:

Act 21 (R.40, H.3890) – School Make-Up Days
The act takes the General Assembly out of making decisions about missed school days. The act requires districts to designate at least three days in the school calendar for make-up days in the event of inclement weather or other occurrences. If those days have been used or are no longer available, a local school district board of trustees may lengthen the school day, may operate on Saturday or may waive up to 3 days. The State Board of Education may waive the requirements of make-up days beyond the three days forgiven by a local school board, not to exceed three additional days. By July 1 annually the State Department of Education will provide the legislature with a detailed report from each district on the number of days missed, days made up and days waived.

Act 24 (R.45, S.154) – Interscholastic Activities
The act allows the State Board of Education to grant a waiver allowing a student to participate in interscholastic activities if the student's ineligibility is due to a long-term medical condition.

Act 52 (R.83, S437) – James B. Edwards Civics Education Initiative
The law requires students to take the civics test administered by the United States Citizenship and Immigration Services during the course of their high school curriculum, specifically the U.S. government course. Schools must report the percentage of students passing the test to the Education Oversight Committee for inclusion on the school report card. The requirement begins with students entering the 9th grade beginning the 2016-17 school year.

Act 66 (R.113, H.3882) – School Bus Drivers Exam
The law conforms the requirements that a school bus driver must have a physical examination to the requirements of the Federal Motor Carrier Safety Regulations. Previously, the examination had to be conducted exclusively by a physician, nurse practitioner or a physician assistant. The change allows chiropractors to complete the physical exam.

EOC WORK IN PROGRESS
Copies of previous work can be obtained from www.eoc.sc.gov

Standards and Accountability:

Consolidation of Federal and State Accountability System — Ongoing

The law requires the EOC to recommend by the fall of 2016 a new accountability system that merges the state and federal report card systems.

Family Friendly Standards — January 2016

The EOC in collaboration with the South Carolina Department of Education will update SC Family Friendly Standards in English language arts and mathematics.

Release of 2015 State District and School Report Cards — November 2015

EOC has already approved a revised format for the report cards.

Evaluation:

District Efficiency Reviews — June 2015

The EOC published results of four independent analyses of district efficiency reviews of Barnwell 19, Clarendon 1, Lexington 4 and Dorchester 2.

Annual Review of EIA-Funded Programs and Initiatives — Fall 2015

EOC will make recommendations for Fiscal Year 2016-17 to Governor and General Assembly.

After-School and Community Partnerships — Fall 2015

The EOC will document and evaluate the partnerships and the impact of the partnerships on student reading.

Full-day 4K for At Risk Children — January 2016

The EOC will conduct an annual evaluation of the program. In addition, in August of 2015 the EOC will release results of analysis of the early readiness assessments from school year 2014-15.

Annual Evaluation of SC Teacher Loan Program and Parent Survey — June 2016

The EOC will report on the progress, challenges, and impact of the SC Teacher Loan Program on recruiting teachers into the teaching profession and the results of the annual parent survey.

TransformSC — June 2016

The EOC, in collaboration with the Riley Institute at Furman University, will continue to evaluate the three innovative education models being implemented.

Community Block Grant — Summer 2016

The evaluation of community block grants awarded in Fiscal Year 2014-15 will be released.

Public Reporting and Engagement:

Public Awareness Campaign — Fall 2015

The EOC will implement a public awareness and engagement plan focused on a reading contest aligned to the Big Game – Clemson v. USC.

Student Reading Success Activity Guide — August 2015

The guide, designed to help families, caregivers, tutors and teachers working with children in kindergarten through grade 3, was provided to all summer reading camps and will be provided to all schools serving students in K-grade 3 this fall.

EDUCATION OVERSIGHT COMMITTEE

July 1, 2015 through June 30, 2016

Tentative Meeting Schedule

Subcommittee	Full Committee
	August 3-4, 2015
September 21, 2015	October 12, 2015
November 9, 2015 * November 16, 2015 *	December 14, 2015
January 25, 2016 **	February 8, 2016
March 21, 2016	April 11, 2016
May 16, 2016	June 13, 2016

* The EIA and Improvement Mechanisms Subcommittee will likely meet twice in November to work on budget and proviso recommendations for FY2016-17.

** January 18 is Martin Luther King Day; therefore, the subcommittee meetings are moved to the following Monday, January 25.

Pre-K Benefits: The Facts on Fade-out

As policymakers adopt policies for pre-K programs, they want to know that the programs are effective. Do the gains last? Here's what we know.

Pre-K yields short-term academic gains.

After one year, children who participated in pre-K showed substantial gains compared with children who did not.

Pre-K participants gained about **one-third of a year of additional learning** over their peers who did not attend. This gain is equivalent to one-third of the achievement gap between children from low-income families and their peers. These findings are based on 100+ studies over several decades.

The benefit of preschool at school entry is equal to moving a child **from significantly below par to average** — from the 30th to the 50th percentile on achievement tests — based on studies over the last 25 years.

Pre-K programs designed on current research about child development and program quality yield even greater initial results — in some cases doubling the academic benefits.

Pre-K yields long-term academic gains, too.

While the results of studies show that academic benefits may diminish somewhat over time — few studies show they fade away completely.

On average, the gap in results between pre-K participants and nonparticipants diminished by half from kindergarten to the later early grades. Still, pre-K participants performed better than their peers in later grades in nearly all studies.

K-3 academic programs are often poorly aligned with pre-K. The repeat of pre-K curriculum content in kindergarten does not encourage each child to move ahead when ready.

Many early grades **teachers spend less time** with children who attended pre-K, studies show, as they catch up other students. Researchers also cite a *spillover effect* as former pre-K children help catch up their peers who didn't attend pre-K.

Benefits of pre-K can be sustained long term if children move from high quality pre-K to well-aligned kindergarten and early-grades programs, as recent research recommends.

Pre-K also yields substantial nonacademic benefits.

Pre-K provides positive social, emotional, physical and behavioral benefits on a child's long-term success in school and life, especially for children from low-income families.

Pre-K improves the **level of education completed, graduation rates and earnings; it reduces the incidence of crime and teen pregnancy.** Studies also document long-term health benefits.

Research shows pre-K children are less likely to need **special education** and be **retained** (fail a grade) in school. The savings from these benefits, some believe, are sufficient to fund a sizable portion of the cost of the program.

These gains have been documented in model programs dating back decades, and they have also been shown in current state-funded pre-K programs and Head Start.

New Pre-K Research is Clear: Quality Matters

- *Recent research on brain development has transformed what practitioners believe is necessary in pre-K classrooms*, especially for children from low-income families. Experts believe 2010 was the year this research took hold in program design. Policymakers need to focus on recent research about newly designed programs.
- Current research shows that *close interactions between teachers and children are key to long-term gains*. Teachers need training for these interactions to be most effective. Key elements in developing this relationship include observation, measurement, feedback, coaching and ongoing professional development. More structural aspects of quality, such as small class-size, are important but not sufficient for gains.
- The benefits of pre-K programs are *most substantial and lasting for children living in poverty,* and they are significant for children from low-income families.
- *Curriculum alignment through the early grades is critically important* for children who completed pre-K. Studies show that if these children are not presented with new, more advanced material throughout the early grades, their learning will stall.
- The 2010 Head Start Impact Study of a 2002 cohort of Head Start children is widely quoted by pre-K critics. Yet, *it is flawed in ways that invalidate its conclusions*. It reports that initial gains made by Head Start participants disappear by first grade. Many children, however, assigned to its control group as nonparticipants attended Head Start at an alternate site. And many children assigned to the Head Start group did not complete the year. Furthermore, Head Start was created in 1965 as part of the "War on Poverty," with a focus on child care — not education. The policy push for high-quality education within Head Start started in 2007. Using the 2002 Head Start program as a proxy for pre-K programs, which emphasize school readiness, is inappropriate.

Definitions

Three terms describe a perceived phenomenon – the reduction in the gap in results between children who attended pre-K programs and those who did not, over time.

- **Fade-out:** implies that pre-K participation provides few or no lasting benefits – and by 3rd grade most academic benefits are gone or greatly reduced. Critics tend to rely on a few studies rather than the entire research field.
- **Convergence:** implies that the achievement results of pre-K and non-pre-K children grow together over time. Some would argue they become indistinguishable as children enter poorly aligned or low-quality early grades programs that do not sustain the gains made in pre-K. In fact, the academic results may grow toward each other, but they rarely completely converge.
- **Catch-up**: implies that early grades gains made by nonparticipants are sufficient to bring them to the same results as pre-K attendees. Some argue that effective early grades programs are actually "catching up" non-participants through special interventions since teachers do not have to focus as much attention on the children who did attend pre-K programs.

References

www.sreb.org/earlylearning for annotated bibliographies and additional references

High Quality on New Measures Yields Lasting Benefits

The following state-funded pre-K programs have implemented the evidence-based elements of quality identified in recent research; they have all shown sustained academic growth in students each time the programs were studied.

Program	Long-Term Academic Outcomes	Measurable Gains Through...	Larger Gains for Children in Poverty?
New Jersey (Abbott Preschool)	**Equals a 10 percentile boost on state test**	**Grade 5**	**Yes**
Boston Pre-K	**43% of participants, compared with 34% of nonparticipants, scored proficient or above on state third-grade language arts test**	**Grade 3**	**Yes**
Maryland (Extended Elementary Edu. Program and Judy Centers)	**Under study; Statewide kindergarten readiness is up 33 percentage points from 2002 to 2013**	**Grade 4**	**Yes**
North Carolina (More at Four)	**Significant academic gains for participants on third- grade end-of-grade assessments**	**Grade 3**	**Yes**

Source: Early Learning: The New Fact Base and Cost Sustainability, Minervino and Pianta, 3-4, 2013

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Policy analysis from the Southern Regional Education Board

SREB

Confronting the Fade-Out Debate: Children Flourish and Gains Do Last in High-Quality Pre-K Programs

SREB states have led the nation in providing access for children to their state-funded early childhood education programs for over a decade. In 2005, the majority of children attending state-funded prekindergarten (pre-K) programs in the nation were doing so in an SREB state. By 2013, 54 percent did so. **These pre-K programs in the SREB region lead the nation in access**. With Mississippi's launch of its program in 2014, all SREB states now serve 4-year-olds in state-funded pre-K programs. Six states nationwide still do not fund pre-K programs. (See Appendix on Page 16 for information on the access to public pre-K programs in SREB states.)

Despite these impressive gains in access to state-funded programs, some skeptics have urged policymakers not to expand pre-K. They cast doubt on its worth as an investment of more state dollars, because they fear a "fade-out" of gains. This fear is that the cognitive gains made during the pre-K year will fade away by the end of third grade — as the findings of a few studies have suggested. If SREB states are to continue expanding access to such programs for 4-year-olds and even younger children, policymakers need to know these programs can help children flourish throughout school. And, they need to know under what conditions the initial gains yield lasting benefits.

Despite impressive gains in access to state-funded programs in SREB states, some skeptics have urged policymakers not to expand pre-K.

Policymakers need to know these programs can help children flourish.

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This brief traces the evolution of research on state-funded pre-K programs. While a few older studies gave rise to and perpetuated a fade-out theory, recent research has produced evidence that children can sustain the gains made during the pre-K year. This brief begins with a historical re-

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view of the research on pre-K programs — including a significant study that fueled the perception of fade-out. Next, it explores the new research that deepened practitioners' understanding of the elements of program quality that lead to better child outcomes such as higher achievement test scores. These newer research findings indicate that policy changes are needed in state-funded pre-K programs to ensure that classrooms incorporate these evidence-based elements of high quality. Finally, this brief focuses on what the research tells policymakers on how to target state investments to ensure children who have the most to gain from early childhood investments have access to programs. For these children, starting school at age 5 is too late.

How Older Research Seeded the Fade-Out Debate

Short-Term Academic Gains

Most studies of pre-K programs find that program participants made statistically significant initial gains, compared to their nonparticipating peers. Researchers examined decades of studies, covering hundreds of programs of varying quality that date back to the 1960s. Through meta-analyses, or studies of multiple studies, they calculated the average initial gains made by participants in all of these programs.

- Multiple meta-analyses — some dating back 25 years — documented by the National Institute on Early Education Research (NIEER) in 2011 found early childhood education programs, on average, produced positive initial outcomes for participants equal to moving a child from the 30th to the 50th percentile in test scores at school entry.
- In a 2013 meta-analysis covering studies of 84 preschool programs, researchers from the Center for Economic and Public Policy at the University of California, Irvine found that the initial academic effect of pre-K equated to about a third of a year of additional learning for program participants. They indicated that this effect size is equal to nearly half of the achievement gap associated with race found at kindergarten entry.

These studies on large-scale programs sometimes found that the academic gains from preschool attendance that were evident at school entry appeared to diminish as children moved through school. But, the evidence across all the research also showed that these initial academic gains did not disappear after completion of the program as the term fade-out implies. In general, NIEER reported in 2011 that preschool participation led to academic achievement gains that leveled off during the early grades. However, these gains persisted at half the initial impact as children progressed through their schooling. (See Box A on Page 3 for more on fade-out.)

More importantly, research showed that the quality of the program made a significant difference. The initial gains children made in high-quality programs persisted longer than gains made in lower-quality programs. Early high-quality, intensive, small-scale efforts, such as the well-known HighScope Perry Preschool Program of the 1960s and Abecedarian Project of the 1970s, showed longer sustained achievement outcomes than found in early large-scale, lower-quality programs. Children who attended these classic programs — and other high-quality programs — also demonstrated larger initial gains that resisted fade-out further into the later grades. For instance,

> *The initial gains children made in high-quality programs persisted longer than gains made in lower-quality programs.*

- A 2013 analysis conducted by University of California (Irvine and Los Angeles) researchers tracked children who attended preschool from the mid-1990s to the early 2000s. It found that children who attended higher-quality preschool programs entered school more prepared than children who attended lower-quality, center-based programs.

- NIEER reported in 2011 that the long-term academic gains — as measured 10 or more years after program completion — from participation in high-quality preschool programs, are equivalent to a third of the achievement gap between low-income children and their peers.

These small-scale programs were vital in informing researchers on best practices in program and teacher quality.

Although most of the studies of high-quality programs are compelling, some skeptics have focused on a few studies — rather than the entire body of research — to conclude that large-scale, early childhood education programs are ineffective. In particular, skeptics often cite the 2010 National Head Start Impact Study (NHSIS) as evidence against pre-K expansion. This study of a 2002 cohort of 3- and 4-year-olds found that most of the cognitive gains the Head Start participants made were lost by the end of

Box A

Understanding Key Terms in the Fade-Out Debate

Early childhood education has strong advocates for increased investment and a share of vocal skeptics. Their debates over pre-K generally focus on the benefits of the program in relation to its cost, or return on investment. The skeptics are concerned with the apparent **fade-out** of the academic benefits of pre-K in the years following participation. They particularly fear the loss of advantage these children gained in reading and math, compared with those who did not attend pre-K. They point to research studies that seem to show the advantage disappears by the end of third grade, concluding that pre-K investments are not worthwhile.

But, researchers stress that the loss is more like *fading* than *fade-out*. They have documented a complex interplay of circumstances that leads to a decrease in the advantage. Some of these circumstances that the researchers documented include:

- low-performing early grade programs in K-12 public schools that are unable to sustain the gains children made in higher quality pre-K programs as the children progress through school;
- early grades teachers who dedicate more time to children who did not attend pre-K programs in an attempt to catch them up;
- misalignment of curricula and standards between pre-K and K-3;
- effective kindergarten and early grades interventions in some settings that are able to catch up the lower-performing nonparticipants to their peers who attended pre-K;
- a spillover effect in the early grades between participants and nonparticipants, as children who attended pre-K help their peers catch up.

Depending on how researchers have understood these factors to influence children after pre-K, some believe a more accurate term for the lessening of outcomes over time is **convergence**, suggesting that the achievement results of participants and nonparticipants grow together during the early grades. Others call it "**catch-up**." They focus on how nonparticipants are able to gain more ground in kindergarten and the early grades. In this view, pre-K does provide benefits to participants. But nonparticipants have a chance to gain the same benefits, while pre-K students stagnate in their learning during the crucial early grades. Even so, in most studies, where the difference in outcomes between participants and nonparticipants fades somewhat as researchers follow the children into their schooling, pre-K participants continue to outperform their peers who did not attend such programs.

first grade. This study, however, had design flaws that compromised its results. First, the majority of children in the nonparticipant control group attended other preschool programs — and some even attended Head Start at other program sites during the study. Second, some children in the subject group did not finish the entire Head Start school year. The significant blurring of the groups made the conclusion about participation invalid.

It is problematic to draw conclusions from one study and apply them to all pre-K programs. Meta-analyses that average results across the literature provide better estimates of a program's overall impact. Also, researchers and analysts should not generalize conclusions of a single study beyond its scope. This principle is especially important in the case of this and other early Head Start studies. Head Start was created as an economic development program. It, therefore, was more parent-focused in providing low-cost child care than child-focused in providing quality early education. Subsequent studies of Head Start demonstrate an increase in initial academic outcomes for program participants after the program implemented quality-driven policy changes in 2007, such as increased teacher qualifications and changed curricula, including a greater focus on early reading skills.

Pre-K Nurtures Children in Nonacademic Ways

The fade-out argument focuses primarily on achievement gains. **Yet, child development experts agree that human growth is a much more holistic process — one that includes physical, emotional, social and behavioral development — as well as cognitive growth**. The National Association for the Education of Young Children (NAEYC) affirms that in order for children to be adequately prepared for school, early childhood programs must address all of these domains. Each one is fundamental to the long-term success of children. Achievement test score gains in the early grades alone will not ensure that a child is ready for school and life.

In 2013, a team of researchers from the Society for Research in Child Development and the Foundation for Child Development reviewed decades of research on early childhood education programs to determine what benefits — in addition to achievement gains — preschool might contribute to children's success in life. They found long-term positive outcomes from preschool programs on high school graduation rates, additional years of education completed and lifetime earnings, as well as lower crime and teen birth rates.

Researchers found long-term positive outcomes from preschool programs on high school graduation rates, additional years of education completed and lifetime earnings, as well as lower crime and teen birth rates.

A 2010 meta-analysis from Rutgers University found additional long-term benefits for children who attended preschool programs, including higher grade-point averages, fewer instances of special education placement and lower rates of grade retention. It also found benefits from preschool participation on key social and behavioral measures such as self-esteem, school adjustment, aggression and anti-social behavior.

Research even documented that Head Start in its early years, before its shift to education programming around 2007, provided significant long-term benefits to program participants. Head Start positively impacted program participants' health, likelihood of graduating from high school and college attendance rates. It also reduced the chances of participants repeating a grade in school and being placed in special education.

Long-Term Gains = Return on Investment

While Head Start was developed as an economic development initiative, state-funded pre-K programs were created to prepare children for school. States should be looking to longitudinal studies of large-scale, state-funded pre-K programs for evidence of benefits and financial returns to the state from their early childhood investments. In fact, state-funded programs demonstrate larger positive short- and long-term impacts than federally funded Head Start across the research. A 2014 meta-analysis from the Washington State Institute for Public Policy compared results from 49 rigorous studies of state-funded

pre-K, university-run preschool, and Head Start programs to see how these programs impacted low-income 3- and 4-year-olds on a variety of measures. The researchers found that the state-funded programs outperformed Head Start programs on key child outcome measures, including test scores at school entry and high school graduation rates. They also found less grade-level retention and instances of criminal behavior in the state-funded programs than in studies of the Head Start program.

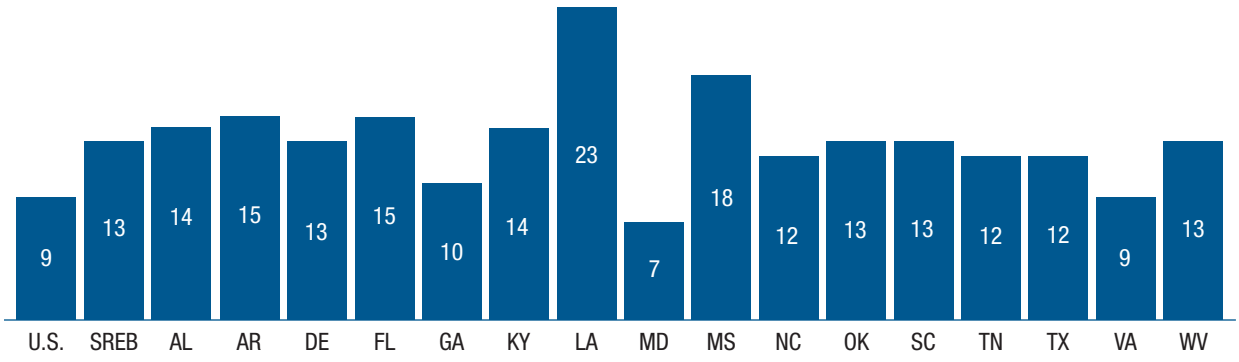
While the fade-out theory narrowly focuses on cognitive development and academic achievement gains, it is the long-term, nonacademic outcomes that equate into large financial returns for states. University of Chicago economist, James Heckman, determined that investments made earlier in an individual's life equate in larger returns than investments made later. Investments in lower student-teacher ratios in K-12, publically funded job-training programs, adult literacy programs and subsidized tuition after high school lead to lower returns than investments in early childhood programs.

In particular, by investing in high-quality pre-K programs, state K-12 school systems can reap large savings from two programs: remediation for students who have failed a grade and special education. SREB states are particularly vulnerable to remediation costs due to high rates of grade-level retention. Fourteen SREB states, in 2012, had higher percentages of school-age children who repeated one or more grades since starting kindergarten than the national average, at 9 percent. In fact, the grade-level retention rates in two SREB states were at least twice the national average. (See Figure 1.)

Likewise, special education costs affect SREB states. A 2015 study from Duke University reported that special education classrooms, with lower student-staff ratios and more specialized services, cost twice as much per student annually as traditional classrooms. In 2011, the median special education placement rate in the SREB region matched the national rate, at 13 percent. Six SREB states served higher percentages of public school students under the Individuals with Disabilities Act, Part B than the national average. (See Table 1 on Page 6.)

Figure 1

Percentages of Children[1] Retained in K-12, 2012



Note: Data for 2012 was collected between February 2011 and June 2012. The SREB percentage was calculated as a median.

[1] These are the percentages of school-age children, ages 5 to 17, who were retained one or more years from kindergarten through 12th grade.

Source: The Annie E. Casey Foundation

Table 1

Percentages of Public School Students Placed in Special Education, 2011-12

U.S.	SREB	AL	AR	DE	FL	GA	KY	LA	MD	MS	NC	OK	SC	TN	TX	VA	WV
13	13	11	13	15	14	11	15	12	12	13	13	15	14	13	9	13	16

Note: Special education placement means that the student was served under the Individuals with Disabilities Education Act, Part B; Percentages are based on the total enrollment in public school, prekindergarten through 12th grade. The SREB percentage was calculated as a median.

Source: National Center for Education Statistics, Digest of Education Statistics: 2013.

While high rates of special education placement drive up public education costs, high-quality, state-funded pre-K programs can help prevent some of these placements before school entry if children are properly screened for developmental delays early and supported by highly qualified teachers through specialized services. (See Box B on Page 7 for a state example of cost reduction.)

Recent Research Yields New Hope

Brain Research: Early Years Matter

Learning does not begin at pre-K entry or even at school entry. Rather, the brain begins to develop before birth. The National Scientific Council on the Developing Child in conjunction with Harvard University researched the earliest years of human development, specifically the impact of early experiences on the human brain. In 2007, the council documented that the first years of life are when the brain is most capable of growing, and that ability decreases as an individual ages. They concluded that interventions during the first few years of life are more effective and efficient than those made later.

Recent scientific findings have illuminated the important role of adults in preventing early achievement gaps for young children, especially in language and literacy. The National Scientific Council of the Developing Child also reported that young children's brains are physically shaped by the quality of their environments. In particular, the quality of the relationships and interactions between children and adults are critical in brain development. These factors are most predictive of long-term child outcomes.

Four Lessons on Growing Gains From Pre-K for the Long Term

First Lesson: Process Quality Over Structural Quality in Cultivating Long-Term Gains

The research has consistently shown that the quality of educational programs matters the most in sustaining early gains made in preschool. But, researchers' understandings about what constitutes quality have evolved over time. When SREB last reported on pre-K in the 2007 report, *Ready to Start: Ensuring High-Quality Prekindergarten in SREB States*, it documented that SREB states were early leaders in implementing all 10 national standards of program quality issued by NIEER at Rutgers University. The first states to implement and maintain all 10 of these standards were SREB states — Alabama and North Carolina.

Since then, researchers have come to understand that some elements of pre-K program quality are more related to sustaining academic gains than other elements. The new brain science on the importance of the interactions between young children and

Box B

Effects of Early Childhood Investments on Third-Grade Special Education Placement in North Carolina

In the 1990s, North Carolina introduced its Smart Start initiative to provide child care and family services from birth through age 5. In 2001, the state created the More at Four Prekindergarten Program, now called North Carolina Pre-K. In a 2015 study of both programs, Duke University researchers concluded that access to one or both of these programs lowered the probability of a child being placed in special education in third grade. They found that the annual state investment per child in More at Four reduced the likelihood of third-grade special education placement by 32 percent. A per-child investment in both More at Four and Smart Start reduced the chance of special education placement by 39 percent.

adults in early child development has shaped new early education practice. Likewise, data from longitudinal studies of the small-scale classic programs like HighScope Perry Preschool Program and Abecedarian Project and other large-scale, publically funded programs informed practitioners on what elements of quality most achieve long-term child outcomes.

These and other more recent studies showed that the relationships and interactions between children and adults within a classroom — called process quality — have the biggest impact on long-term child outcomes. In order to achieve high levels of process quality, pre-K teachers should employ emotionally supportive, instructional strategies between teacher and child that are interactive and intentional. The interactions preferably should occur in small group settings that foster a child's direct engagement in developmentally appropriate activities. Research suggests that large group activities are not as conducive to the manner in which young children learn and develop.

Another key element of process quality is measurement and evaluation. The quality of child-teacher interactions should be measured through direct observation, and states need a system to provide constant feedback to early childhood teachers to ensure they improve the quality of their interactions continuously.

These new findings will necessitate a shift in state early childhood education policies. Traditionally, they have overly focused on structural elements of quality — such as child-teacher ratios, classroom size and other such measures. These elements often carry a hefty price tag. But, they continue to be important, because they provide the necessary environment in which important interactional processes can take place. While low child-teacher ratios by themselves do not guarantee the pay-offs states need, they do provide opportunities for more relational interactions that children need to make progress. Structural elements also are often imbedded in state-program licensing requirements, because they also ensure the minimum safety and well-being requirements for young children.

New promising practices, such as statewide quality rating and improvement systems (QRISs), could accurately monitor and improve process quality in state-funded pre-K classrooms. An effective QRIS should include weighted measures of observed instructional quality and focus on all of the key domains of early childhood development in order to increase program quality systematically.

Lesson Two: Teachers Are Key to Growth in Pre-K Classrooms

Traditionally, teacher quality in pre-K programs has been measured by the level of formal education achieved by classroom teachers. A 2007 meta-analysis from Rutgers University and NIEER found a link between the educational attainment of pre-K teachers — both lead and assistant — and child outcomes, showing that teachers with bachelor's degrees have greater positive effects on classroom quality than teachers with less formalized education.

Pre-K teacher qualification policies in SREB states have changed little in the region since SREB last reported on pre-K programs, despite the evidence-base for raising them. By 2013, NIEER identified four of its standards as related to teacher quality — two of them on credentialing. In 2005, nine SREB states required lead teachers to earn a bachelor's degree. Ten SREB states did so in 2013, including Mississippi, which launched its state-funded program that year. From 2005 to 2013, one additional SREB state, Georgia, began meeting the other NIEER credentialing standard — requiring assistant teachers to have a Child Development Associate (CDA) degree or equivalent.

More recent research suggests that policies requiring bachelor's degrees for pre-K teachers without specifying fields of study may not be enough to guarantee that a teacher is highly qualified to work with 3- and 4-year-olds. Too few states offer teacher credentialing programs that are tailored to prepare early childhood education teachers to effectively engage in high-quality educational interactions with students. Instead, teachers are often certified in early childhood education if they have a bachelor's degree in general early education that is more geared toward older children.

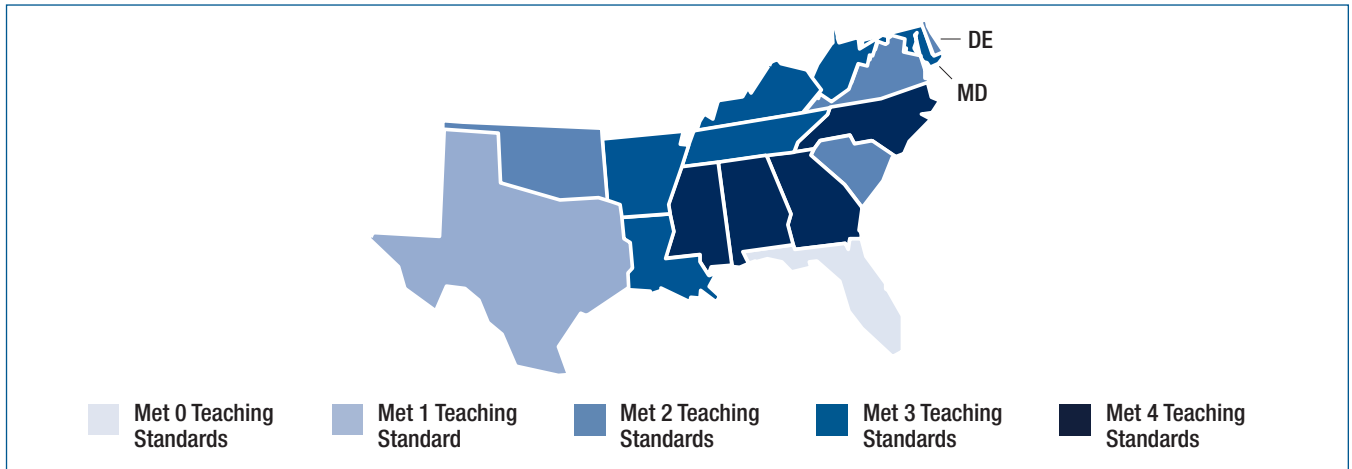
Researchers now know that teaching effectively to young children requires specialized, pre-service and in-service training, in-classroom coaching or mentoring, and ongoing professional development to keep pace with child development findings and best practices. Specialized teacher training is particularly important in reducing special education placements later in public schools. Teachers with specialized training in early childhood development — such as signs of developmental delay — and other early intervention procedures can help detect children who are not developmentally on track before they enter school. (See Figure 2 for more information on how SREB states measure up on teacher quality.)

Lesson Three: Content and Curriculum From Pre-K through Third Grade Needs Alignment

Studies have recently highlighted the importance of curricular and content alignment to program quality as children transition out of pre-K programs and into the early grades. Pre-K classrooms need to focus on developmentally appropriate activities for children — with an emphasis on play and small group settings. While the curricula should be implemented in a manner that is age-appropriate for 3- and 4-year-olds,

Figure 2

SREB States Meeting NIEER's Four Teaching Quality Standards, 2013-14



Note: For states with multiple state-funded pre-K programs, the teaching standards are reported for the program with the highest enrollment numbers. For Louisiana, the map reports the standards met by the Cecil J. Picard LA4 Early Childhood Program. For South Carolina, the map reports the standards met by South Carolina Half-Day Child Development Program (4K). Mississippi's state-funded program operated half of the 2013-14 school year.

Source: National Institute for Early Education Research (NIEER)

the content should build in complexity so it remains challenging. It is vital that young children start to build language, early literacy and early math skills before entering first grade. That challenging but developmentally appropriate content should be continued into the early grades in order to sustain the gains made before school entry.

In 2014, researchers from the University of Chicago and Vanderbilt University found that the curricula in many K-12 public schools were not aligned to early learning standards. Early grades teachers too often had no new content for their students who had completed pre-K, leaving these children to repeat material that they already mastered. The researchers found that kindergarten teachers spent more days a month on basic, repetitive content than on advanced reading and math material. The study also indicated that children who had attended preschool fall behind their peers in math skills on readiness assessments in kindergarten classrooms that offer more days of basic, repetitive math content. In reading, these children showed no gains in kindergarten programs that offered more instruction in basic reading content.

Both pre-K participants and nonparticipants benefited from additional exposure to advanced content during kindergarten. Researchers have noted that repetition of material and misalignment of content between pre-K and kindergarten classrooms play a role in the apparent fading of results from kindergarten through the early grades for pre-K participants. **What appeared as a fading of gains for pre-K participants was actually a steeper learning curve for the nonparticipants and a lack of challenge for the children who attended preschool in previous years.**

Clearly, it is not enough to have high-quality pre-K programs, if that quality is not continued into the early grades. The transition from pre-K to elementary school is a pivotal point; however, it is often overlooked in state K-12 policy. The University of Chicago and Vanderbilt researchers suggest policy changes such as altering kindergarten content to include more days of challenging material as a low-cost way for policymakers to extend the academic gains made during the pre-K year. Another way is to align learning standards from pre-K through high school graduation to smooth students' transitions between grades, provide for the necessary overlaps and eliminate unnecessary content repetition. By 2012, all SREB states with state-funded pre-K programs had developed comprehensive early learning standards and aligned those standards with K-12 state standards. SREB policymakers can now address whether these standards promote challenging, developmentally appropriate curricula for all children.

Lesson Four: High-Quality State-Funded Programs Sustain Gains

Research is emerging with good news about high-quality pre-K programs. Several studies of state-funded programs that have implemented all of the newly recognized elements of program quality show that participants sustain academic gains further into K-12. These programs have all worked to support highly trained teachers with on-going opportunities for growth — through a system for classroom observation, measurement and feedback; high-quality, well aligned and developmentally appropriate curricula; and early learning standards that are aligned with the early grades.

A 2013 report from researchers at the University of Virginia and Ready on Day One indicates publically funded pre-K programs in four states that are effectively resisting fade-out through such high-quality programming. And, the researchers demonstrated that all four of these programs obtained this higher level of quality at or near the same funding levels as other state-funded pre-K programs. Each time these programs are studied, they consistently find gains for their participants when compared to their peers who did not attend the program. By resisting the significant fading found in older studies, these programs demonstrate that large-scale early childhood investments can be lasting for children and beneficial to the state. These four include:

- New Jersey's Abbott Preschool Program;
- Boston Pre-K;
- Maryland's Extended Elementary Education Program (EEEP), now Maryland Pre-K, in conjunction with the state's comprehensive early childhood centers known as Judy Centers;
- and, North Carolina's More at Four Prekindergarten Program, now NC Pre-K.

Where Will State Resources Produce the Greatest Return?

Not All Children Enter School Ready to Learn

The evidence is clear: not all children enter school ready to thrive. Recent brain research indicates that achievement gaps among various groups start many years before current education interventions begin. The findings should help policymakers wishing to make the most of state early childhood investments set priorities. If they target access to early childhood programs to the student groups most in need of these services, they are most likely to get the greatest return on their investment. Two groups of children that constitute a large and growing population in the SREB region are particularly at risk of not being ready for school and would benefit from the investment.

Children Living in Poverty and in Low-Income Households

A 2013 study from Stanford University found that substantial achievement gaps between children from families of different income levels begin to form by age 18 months. By age 2, a 6-month achievement gap in language development has already developed between children from the lowest and highest income households. And, the gap will continue to grow as the children grow. By the time these children reach school age, educational programs have little chance of closing this gap.

A 2012 study from the Center on Children and Families at Brookings confirmed that children living in poverty enter school at a disadvantage to their more affluent peers. The data showed that 48 percent of children living in poverty demonstrated school readiness at age 5, compared with 75 percent of their higher-income peers.

For many young children, early cognitive gains are crucial in preventing large achievement gaps that otherwise would be present throughout the early grades. These gaps in academic preparation continue throughout school. Scientists have known that early vocabulary and language development are paramount to reading proficiency by third grade and later success in school. In 2013, the regional achievement gap between low-income fourth-graders and their peers on the National Assessment of Educational Progress (NAEP) reading at the Proficient level was 29 percentage points. This achievement gap grew from 2009 to 2013 in 15 of the 16 SREB states, signaling that states in the region are falling further behind in preparing children for school success. (See Table 2 on Page 11.)

Reading proficiency, in particular, is predictive of lifelong achievement. A 2012 report from The Annie E. Casey Foundation found that 16 percent of children who lack reading proficiency by the end of third grade will not graduate from high school on time. This is four times the rate for children who read proficiently. Children living in poverty and struggling to read by the end of third grade demonstrate even greater gaps in graduation rates. Policymakers aiming to increase long-term outcomes through reading proficiency initiatives need to look years before the nationally recognized benchmark of third grade.

Current research is also clear that children living in low-income families gain more from high-quality early educational interventions, including pre-K, compared to their higher-income peers. As addressed in a 2013 report from the Society for Research in Child Development and the Foundation for Child Development, state-funded pre-K programs with universal eligibility allow for analyses of children from various income families. (These programs admit all age-eligible children regardless of family income so long as seats are available.) Studies of children in these programs can compare the gains made by participants in one pre-K program across household income levels. Numerous studies of two universal programs — Georgia Pre-K and Oklahoma Early Childhood Four-Year-Old Program — found larger positive, academic gains in early math, reading and language skills for children from low-income families than for their peers from higher-income families.

Findings like this one are particularly important for the SREB region. Fourteen SREB states had higher percentages of school-age children living in low-income households than the national average in the 2012-13 school year. In four of these states, more than 60 percent of public school students were eligible for free- or reduced-price lunch. Even more dire, 13 SREB

Table 2

NAEP Fourth-Grade Reading Results

Percentages Scoring at or Above Proficient by Income Level, 2009 to 2013

	Percentages of Low-Income Fourth-Graders Scoring At or Above Proficient		Percentages of All Other Peers Scoring At or Above Proficient		Achievement Gaps Between Low-Income and All Others		Change in Gap[1]
	2009	2013	2009	2013	2009	2013	2009 to 2013
U.S.	17	20	45	51	28	31	3
SREB Median	18	21	43	50	26	29	3
Alabama	16	18	43	49	27	31	4
Arkansas	20	22	42	46	22	24	2
Delaware	21	25	45	52	24	27	3
Florida	25	27	49	58	24	31	7
Georgia	18	21	44	53	26	32	6
Kentucky	24	23	49	51	25	28	3
Louisiana	13	15	32	42	19	27	8
Maryland	18	24	49	58	31	34	3
Mississippi	14	15	38	42	24	27	3
North Carolina	17	22	46	53	29	31	2
Oklahoma	18	21	39	43	21	22	1
South Carolina	15	17	43	46	28	29	1
Tennessee	17	18	39	52	22	34	12
Texas	17	17	43	47	26	30	4
Virginia	18	21	49	56	31	35	4
West Virginia	17	24	37	37	20	13	-7

[1] A positive value for the change in gap means the achievement gap is widening, while a negative value indicates that the gap is closing between low-income students and their peers.

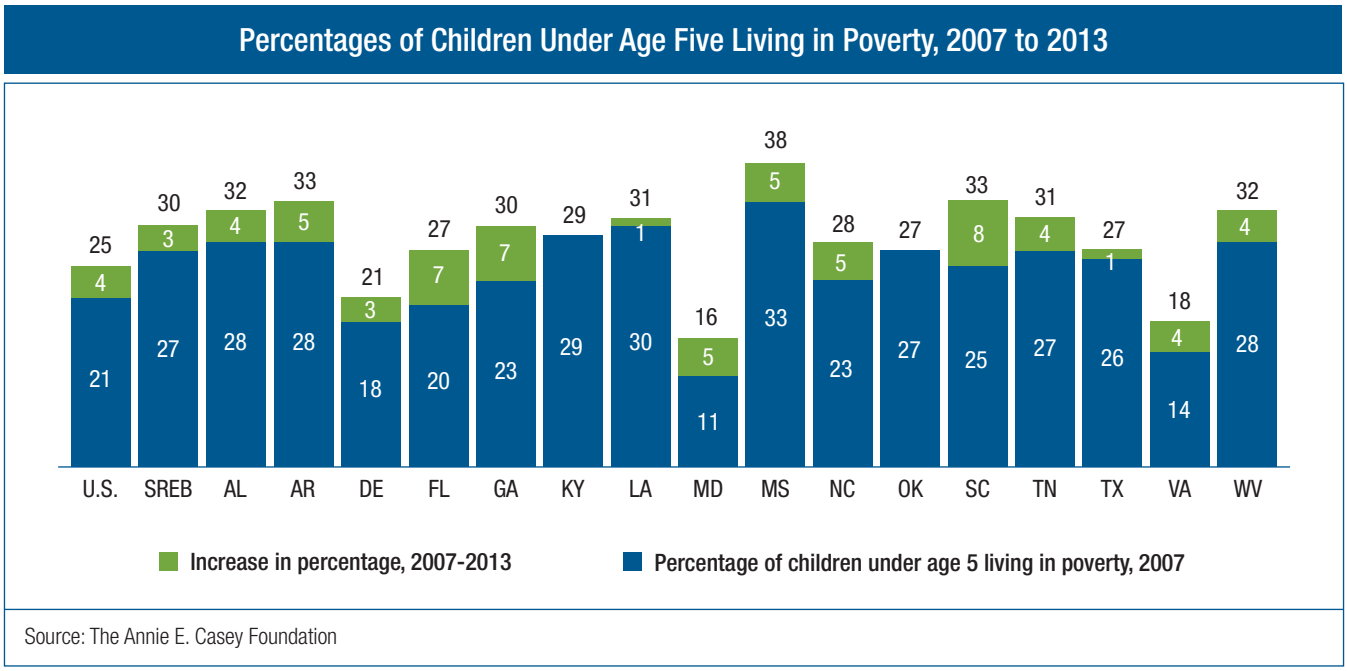
Source: National Center for Education Statistics

states had higher percentages of children under age 5 living in poverty than the national average at about that time. Nearly one in three young children in the region lived in poverty that year. And the trend is increasing: from 2007 to 2013, the percentages of children under age 5 living in poverty rose in 14 of the 16 SREB states. (See Figure 3 on Page 12.)

Poverty rates are higher in states across the nation for families with young children than for those with older children, typically because parents in the first group are younger themselves and earlier in their careers. Education investments during these early years benefit the entire family — through access to much-needed child care, opportunities for parent engagement with schools and teachers, and parent education and services. These investments in entire families can reap large financial returns for states beyond child-centered outcomes, including a more productive work force and vital economy.

Access to higher-quality preschool programs in the region, regrettably does not match the need exemplified in the research. In 2015, the Education Week

Figure 3



Source: The Annie E. Casey Foundation

Research Center reported large gaps in the percentages of poor and nonpoor 3- and 4-year-olds who enrolled in center-based preschool programs in 2013. **In the nation, 3- and 4-year-olds living *above* the poverty line attended preschool at rates 16 percentage points higher than those living in poverty**. Six SREB states had enrollment gaps larger than in the nation in 2013. (See Table 3 on Page 13.) Rather than attending these higher-quality center-based programs, research shows that children from the lowest-income households attend child care centers that are overwhelming low-quality and unlicensed — and often unsafe — at higher rates than their higher-income peers.

Even in states where the state-funded pre-K program limits eligibility to children whose family household income falls below an established threshold and provides ample seats for the state's low-income population, additional barriers prevent many lower-income families from enrolling their children. Oftentimes, publically funded program sites are not located near the areas of greatest need, such as in rural school districts. Furthermore, families may not have transportation to pre-K. And, few state-funded pre-K programs are full day, which limits who can attend. Low-income families often do not have the work flexibility or family support to allow their children to attend half-day programs. All of these issues should be considered when states expand access and designate program sites.

Dual-Language Learners

Children facing economic distress are not the only ones who benefit from pre-K investments. Researchers have documented that dual-language learners (DLLs) also benefit greatly from early education opportunities. DLL children in the United States — who live in households where at least one member speaks a language other than English — often need exposure to the English language before school entry through language and early literacy pre-K content. (See Box C for more information on DLLs.)

- According to a 2012 study of the **Texas Public School Prekindergarten**, participants who qualified for the program based on limited English proficiency benefit substantially from the pre-K program. The study showed that former Texas pre-K participants who took the Spanish version of the third-grade Texas

Assessment of Academic Skills made significant gains in math over their Spanish-speaking peers who had not attended the state-funded pre-K program.

- In a 2008 study of children attending the **Oklahoma Early Childhood Four-Year-Old Program** in Tulsa, Hispanic children experienced large achievement gains in early reading, early math and language skills after attending the program. In particular, Hispanic children from homes in which Spanish is the primary language experienced larger gains from the program than their Hispanic peers who came from predominantly English-speaking homes.

According to the Annie E. Casey Foundation, the percentages of school-age children who speak a language other English at home rose in 14 SREB states from 2007 to 2013. More than 10 percent of school-age children in half of SREB states live in households where a language other than English is spoken, making pre-K programming an important intervention for a significant proportion of young children in SREB states. (See Figure 4 on Page 14.)

Exposure to English before school entry can reduce the need for remediation and high-cost interventions for these students later in public school. The 2013 NAEP fourth-grade reading results for English-language learners (ELL) nationwide indicated these children lag behind their peers throughout the early

Table 3

Percentages of 3- and 4-Year-Olds Enrolled in Preschool by Income Level, 2013

	Percentage of All 3- and 4-Year-Olds Enrolled	Percentage Point Enrollment Gap[1] Between Nonpoor and Poor 3- and 4-Year-Olds
U.S.	47	16
Alabama	43	18
Arkansas	48	13
Delaware	48	15
Florida	50	17
Georgia	49	19
Kentucky	43	16
Louisiana	51	12
Maryland	48	18
Mississippi	52	4
North Carolina	44	23
Oklahoma	41	7
South Carolina	44	15
Tennessee	40	16
Texas	42	15
Virginia	48	19
West Virginia	37	5

[1] A positive value for the percentage point enrollment gap means a larger percentage of nonpoor children attend preschool programs than their peers who live in poverty, while a negative value would indicate that a larger percentage of children living in poverty attend preschool programs.

Source: Education Week Research Center

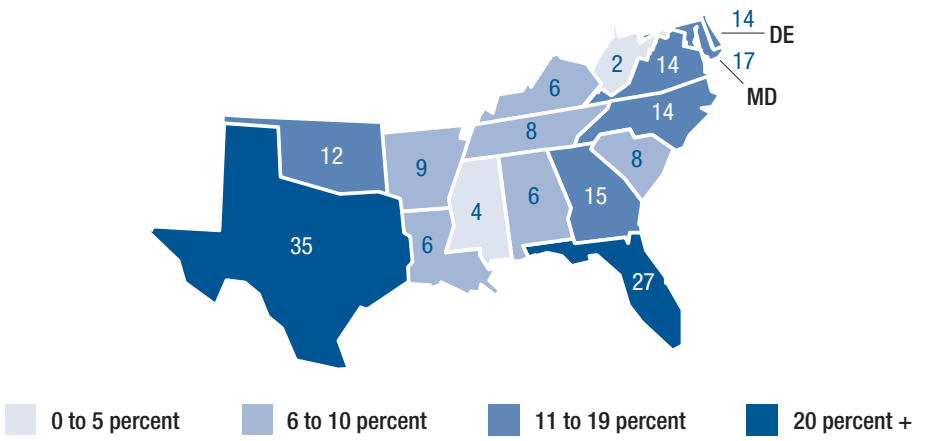
Box C

Early Childhood Education Advantages for Dual Language Learners

The term **dual-language leaner** (DLL) has gained traction in early childhood circles in recent years. Early childhood experts use this term — rather than the K-12-associated English-Language Learner (ELL) term — for a child under age 5 who is learning its family's native language while learning a different language than spoken at home. As Child Trends indicated in 2014, DLL status during early childhood can actually be an advantage. The developing brain of a young child is able to learn language with ease, especially during the first few years of life. Exposure to multiple languages before school entry can lead to higher levels of language mastery and cognitive growth. Early childhood education programs offer significant opportunity to help children from households where a language other than English is spoken to master two languages at the same time, while their brains are the most primed for such learning.

Figure 4

Percentages of School-Age[1] Children Who Speak a Language Other Than English at Home, 2013



Note: The U.S. average was 22 percent in 2013. The SREB median was 11.

[1] "School-age" means children ages 5 to 17.

Source: The Annie. E. Casey Foundation

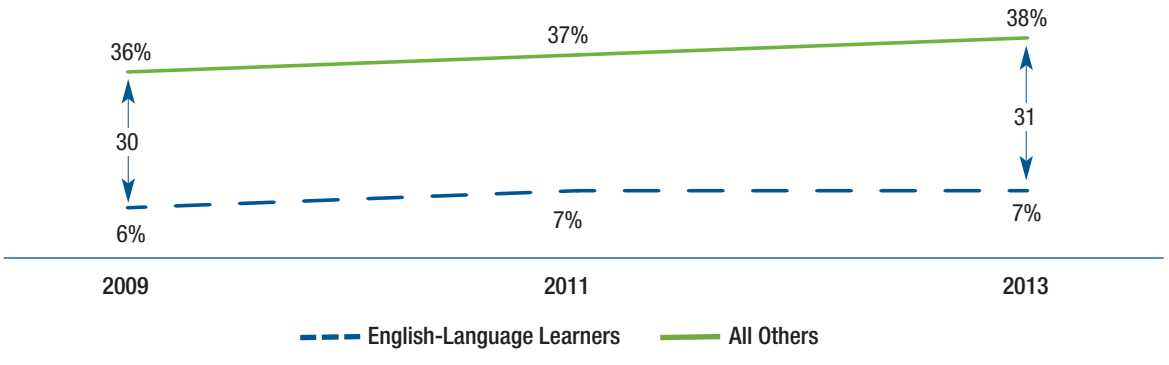
grades. Seven percent of ELL fourth-graders were proficient in reading on NAEP, compared with 38 percent of their peers. More troubling: the achievement gap between these two groups grew larger from 2009 to 2013. (See Figure 5.)

With a growing group of DLL children nationwide, these K-12 savings are worth the investment in high-quality pre-K programs. Not all pre-K programs, however, are able to prepare this group for success

Figure 5

NAEP Fourth-Grade Reading Results

Percentage Scoring at or Above Proficient by English Proficiency in the Nation, 2009 to 2013



Source: National Center for Education Statistics

in school. These children need services and instruction in both English and their home language to best narrow language achievement gaps, and teachers need to be able to provide appropriate specialized instruction. In 2014, only one SREB state — Texas — required its state-funded pre-K program to provide instruction and services to DLL children.

Policymakers concerned with fade-out can draw on these findings to leverage investments in at-risk children and high-quality pre-K programs to promote long-lasting achievement gains.

Conclusions

While a few studies point to a fade-out of gains for pre-K participants compared with their non-participating peers, the entire body of research, particularly new research, shows a different picture. In general, state-funded pre-K programs, even in their early years, showed academic gains at school entry for program participants. These are substantial gains worth saving. Early studies of pre-K programs found that much of the initial achievement gains from pre-K participation diminished as children moved through the early grades; these initial gains, however, did not completely fade out.

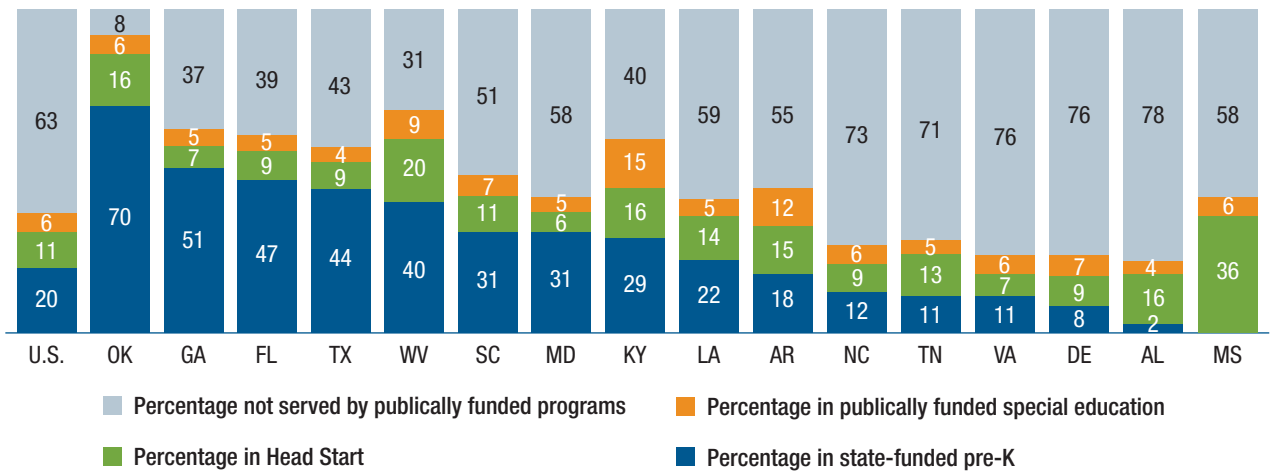
The fade-out argument narrowly focused on cognitive gains — such as achievement test scores. Yet, pre-K has delivered long-term benefits, including increased high school graduation rates, fewer placements in special education, lower grade-level retention rates, better health outcomes, higher educational achievement rates, higher lifetime earnings and lower crime rates. These nonacademic benefits reap large financial returns to a state that go a long way toward funding its expansion.

- **Build Quality:** Not all pre-K programs are created equal. Quality — especially teacher quality — is the most important element to determine if a child will reap long-term academic benefits from attending a pre-K program. However, the definition of "high-quality" has changed as new research on early brain development and longitudinal studies of successful pre-K programs have illuminated the most important elements to achieve long-term outcomes.
- **Invest Early:** Early childhood education is one important way to increase the percentages of children who enter school ready to learn and to help prevent achievement gaps found later in the early grades. The academic boost at school entry provided by high-quality pre-K programs is a worthwhile investment for states; research shows that investments made earlier in life produce a larger return than those made later.
- **Target Investments:** Early investments in high-risk children — such as those from low-income families and dual-language learners — will result in the largest achievement gains. A state should consider the groups most at risk of not being ready for school when establishing state-funded pre-K program eligibility guidelines. Programs should be targeted and accessible first to these at-risk children and include the specialized services these children need most.

The best chance an SREB state has to ensure that all of its children have the opportunity to flourish in life is to provide them with high-quality early childhood programs led by highly qualified and fully trained teachers.

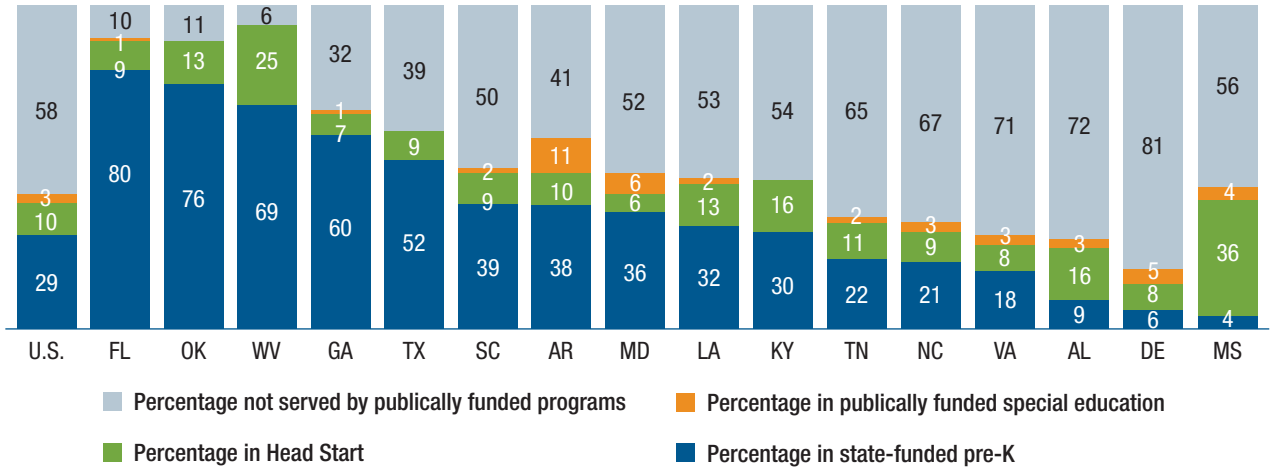
Appendix

Percentages of 4-Year-Olds Enrolled in Publically Funded Prekindergarten Programs, 2005-06



Source: National Institute for Early Education Research (NIEER)

Percentages of 4-Year-Olds Enrolled in Publically Funded Prekindergarten Programs, 2013-14



Note: The enrollment percentages for Mississippi are SREB calculations from NIEER data. Mississippi's state-funded program only operated half of the 2013-14 school year.

Source: National Institute for Early Education Research (NIEER)

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Education Policies

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June 2015 (15E05)

Competing Through KNOWLEDGE

South Carolina's Education–Workforce Matchup: 2013–2030
Identifying the Higher Education Needs of the 21st Century

Highlights from Economic Impact Study

Overview: The Darla Moore School of Business at the University of South Carolina conducted research and subsequently published an economic impact report – South Carolina's Education-Workforce Matchup: 2013–2030, Identifying the Higher Education Needs of the 21st Century. The report was commissioned by and prepared for the Competing Through Knowledge initiative of the South Carolina Business Leaders Higher Education Council (SCBLHEC).

Findings: The economic impact study examines current and projected education requirements for employment in the South Carolina labor market through the year 2030, and then compares these requirements of the current and projected education profiles of the South Carolina workforce.

Major findings included:

- Over the next 17 years, approximately **553,884 new jobs** will be created in South Carolina, that is, jobs that result directly from economic growth and expansion. **52 percent of these new jobs will require higher education**.
- New jobs created from economic growth over the next 17 years will outpace the projected increases in the size of the labor force and thus create a **workforce shortage**.
- By 2030, there will be a **shortage of 44,010 workers with associate's degrees** and **70,540 workers with bachelor's degrees or higher**.
- The demand for registered nurses will comprise nearly 40 percent of the workforce shortage in 2030 that results from a lack of associate's degree recipients. There will be an estimated **shortage of 17,438 registered nurses** in 2030.
- The occupation with the second highest shortage is **General and Operations Managers**, which is projected to fall short by 9,134 workers.
- The five occupation groups requiring higher education that are projected to have the highest workforce shortages in 2030 are: Healthcare practitioners, Management, Education, Business and financial operations, and Computers and mathematics.
- The percentage of all jobs requiring higher education that necessitate either an associate's degree or bachelor's degree or higher will increase from 61.5 percent in 2013 to 66.7 percent in 2030.

Next steps: Looking ahead and analyzing these findings, the SCBLHEC and other policy makers will seek to develop higher education strategies to help ensure that South Carolinians obtain the appropriate skillsets necessary to successfully compete in today's job market, enabling the economic returns to higher education to be maximized statewide.

For South Carolinians to be successful in the 21st century jobs market, they will need to possess the skillsets that 21st century jobs require. In a fast–paced knowledge economy, acquiring these skillsets increasingly requires higher education.

Visit Competing Through Knowledge on the web at
www.CompetingThroughKnowledge.com

South Carolina's Education-Workforce Matchup: 2013-2030

Identifying the Higher Education Needs of the 21st Century

Developed by:
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Executive Summary

One of the essential drivers for success in today's economy is higher education. The economic benefits of higher education are well established in the economics literature, ranging from individual benefits such as increased personal income levels and greater lifetime job opportunities to social benefits such as lower levels of crime and higher voter participation rates. In fact, the percentage of the population with a college degree is the single best predictor of a state's national ranking in personal per capita income levels.[1]

In order for a state to fully achieve all of the benefits of higher education, it is critical to examine the workforce needs of the local economy. Increasing the number of citizens who obtain higher education will not be effective if their education does not prepare them with the appropriate skillsets needed for the job market they will enter upon graduation.

In 2007, the South Carolina Higher Education Study Committee (HESC) was formed to create a broad, statewide strategic plan to meet the higher education needs of South Carolina. Among the recommendations of the HESC was a plan to increase the percentage of the working age population (ages 25-65) with a bachelor's degree or higher from 24 percent in 2008 to 29 percent by the year 2030. The Division of Research at the Moore School of Business conducted an analysis of the economic returns to South Carolina from achieving this goal (which is publically available for download).[2] *The analysis found that by 2030, these gains in higher education would result in South Carolina seeing an annual gain of $6.9 billion in new personal income, $7.8 billion in gross state product, and 44,514 additional permanent jobs per year that would be spread to every region of the state.*

[1] Baum, et. al (2010); Yu (2010)
[2] http://moore.sc.edu/UserFiles/moore/Documents/Division%20of%20Research/EconReturnHigherEdAugust09.pdf

As a follow-up to this work, a group of business and civic leaders formed the South Carolina Business Leaders Higher Education Council (SCBLHEC) in order to focus explicitly on developing policy initiatives related to higher education and workforce preparedness. This initiative is called Competing Through Knowledge. It is modeled after a nationally acclaimed collaboration between business and higher education in the State of Virginia called Grow by Degrees (see www.growbydegrees.org). This study is prepared in conjunction with the Competing Through Knowledge (CTK) Initiative.

Specifically, this study examines the current and projected education requirements for employment in the South Carolina labor market through the year 2030, and then compares these requirements to the current and projected education profiles of the South Carolina labor force. This allows for a comparison to be made to determine where any workforce mismatch may exist, which can then be used by the SCBLHEC and other policymakers to develop higher education strategies that help to ensure that South Carolinians obtain the appropriate skillsets necessary to successfully compete in today's job market and that the economic returns to higher education are maximized statewide. Among the major findings of this study are:

- *Over the next 17 years (2013-2030), there will be approximately 553,884 new jobs created in South Carolina; that is, jobs that result directly from economic growth and expansion. 52 percent of these new jobs will require higher education.*

- *The new jobs created from economic growth over the next 17 years will outpace the projected increases in the size of the labor force and thus create a workforce shortage. Specifically, by 2030 there will be a shortage of 44,010 workers with associate's degrees and 70,540 workers with bachelor's degrees or higher. This implies that, on average, South Carolina will require an additional 2,588 workers with an associate's degree and 4,149 workers with a bachelor's degree or higher every year in order to avoid this shortage.*

- *The demand for registered nurses will comprise nearly 40 percent of the workforce shortage in 2030 that results from a lack of associate's degree recipients. More generally, the Registered Nurses occupation has a larger*

projected shortage of workers than any other – and by a wide margin. There will be an estimated shortage of 17,438 registered nurses in 2030. The occupation with the second highest shortage is General and Operations Managers, which is projected to fall short by 9,134 workers.

- *The five occupation groups requiring higher education that are projected to have the highest workforce shortages in 2030 are: (1) Healthcare Practitioners; (2) Management; (3) Education; (4) Business and Financial Operations; and (5) Computers and Mathematics. Together, these occupation groups will represent over 78 percent of the higher education workforce shortage in 2030.*

- *Jobs that require higher education in South Carolina are increasingly necessitating either an associate's degree or bachelor's degree or higher. This contrasts specifically with jobs that require higher education primarily in the form of non-degree based certifications. The percentage of all jobs requiring higher education that necessitate either an associate's degree or bachelor's degree or higher will increase from 61.5 percent in 2013 to 66.7 percent in 2030.*

For South Carolinians to be successful in the 21st century jobs market, they will need to possess the skillsets that 21st century jobs require. In a fast-paced knowledge economy, acquiring these skillsets increasingly requires higher education. In South Carolina, this typically entails earning an associate's degree or a bachelor's degree. However, in addition to the degree itself, the field of study is critical. Certain occupations will be in high demand in the coming years, while others will not. In providing a detailed breakdown of workforce needs by occupation and education type, this study offers actionable information for the CTK Initiative and other policymakers as they consider how to move South Carolina forward.

Section I – Introduction

Over the last five years, South Carolina has worked to recover from the Great Recession of 2008, the worst economic decline to affect the United States in nearly eighty years. One effect of the Great Recession on South Carolina has been a major restructuring of employment that is continuing to occur statewide. The jobs that are being created in post-recession South Carolina, in many cases, are not the same jobs that were lost during 2008. The industries primarily responsible for job growth have changed, as have job qualifications for many positions. One of the primary sectors in which this phenomenon can be observed is manufacturing, where workers who were laid off during the recession are having to be re-trained in order to obtain manufacturing positions that employ the use of more advanced technology that was not as prevalent among pre-recession manufacturing jobs.

More generally, workers with the lowest education levels were laid off at the highest rates during the recession, and those who have been re-hired have relatively higher levels of educational attainment than their predecessors and are often paid higher wages. This has been shown to be true across the United States (Carnevale et al. 2013). For example, the unemployment rate for those with a college degree increased by only 1.8 percentage points between 2008 and 2010, compared to an increase of 4.4 percentage points for those with a high school diploma or less. There have been permanent losses among sectors that employ less-educated workers and there is an increasing demand for workers with higher levels of education and more advanced skillsets.

The increasing need for higher education in South Carolina, while greater today due to the effects of the Great Recession, is certainly not a new phenomenon and has been previously recognized by state leaders. In fact, the South Carolina Higher Education Study Committee (HESC) recommended an action plan in 2008 that would lead South Carolina towards being counted among the top states in terms of the

percentage of residents with a bachelor's degree or higher by the year 2030.[3] The Division of Research at the Moore School of Business completed an economic analysis of this HESC Action Plan that found (among other things) that upon reaching this goal in 2030, South Carolina will experience an annual gain of $6.9 billion in new personal income, $7.8 billion in gross state product, and 44,514 additional permanent jobs per year.[4]

With a new job market rapidly emerging that requires a well-educated, well-trained workforce, it is important for policymakers to now consider the *next major step* of improving higher education in South Carolina by identifying the specific fields of higher education that are in demand within the state and then to support educational programs to meet those needs. This is the key to building a successful workforce. The more general "one size fits all" approach of simply striving to increase the number of citizens with a four-year college degree is not sufficient. Higher education matters, but the specific type of higher education matters as well. Recipients of higher education must be trained with skillsets that are in demand in the local labor market so that they can take advantage of currently available jobs and new jobs that are being created.

Following up on the work of the HESC, the South Carolina Business Leaders Higher Education Council (SCBLHEC) was formed by a group of business and civic leaders in order to take this next step and focus exclusively on addressing higher education and workforce readiness. This initiative is known as *Competing Through Knowledge (CTK)* and is modeled after the nationally acclaimed collaboration between business and higher education in the State of Virginia known as *Grow by Degrees.* As part of the CTK initiative, the SCBLHEC commissioned this study, which presents a comprehensive analysis and outlook of statewide workforce needs. Specifically, this study details (1) industry-level job trends in South Carolina through the year 2030, (2) the educational requirements associated with these jobs, and (3) the degree to

[3] Higher Education Study Committee (2008)
[4] Division of Research (2009)

which the educational profile of the South Carolina workforce matches these job requirements. Any discrepancies between educational requirements for current and future employment and the education profile of the state's workforce will illustrate the areas of higher education that should be prioritized in the coming years.

The analysis begins in Section II where the current and projected workforce demand is analyzed and broken down by occupation and education requirements; Section III then takes these projections and matches them to the current and projected levels of the workforce supply to determine any shortages or surpluses that exist; Section IV provides a discussion of the findings and Section V concludes.

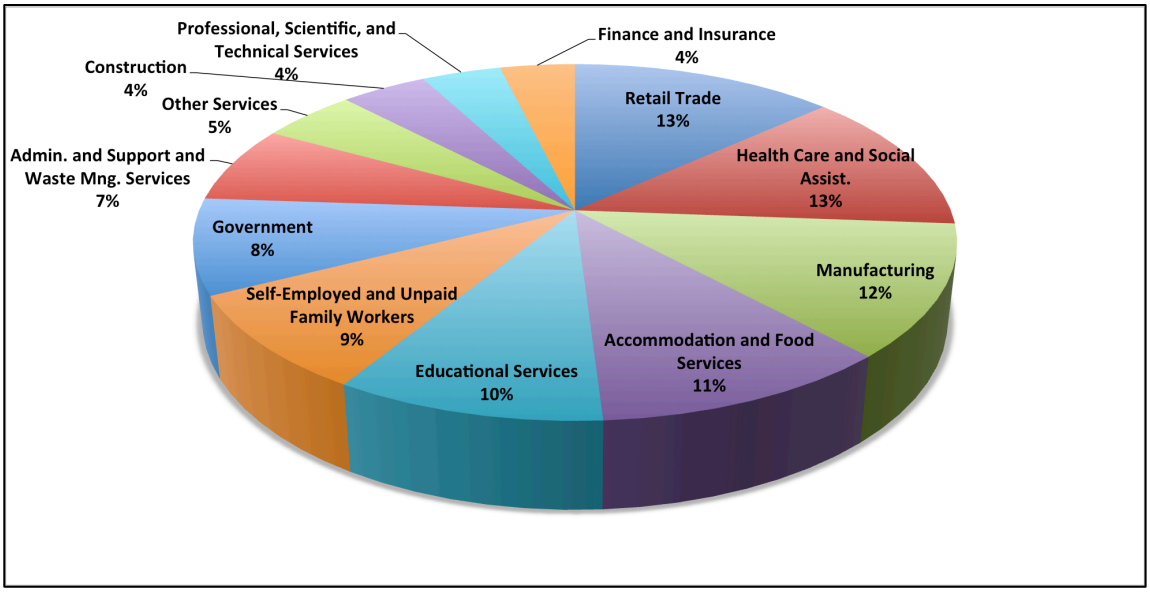
Section II – Assessing the Workforce Needs of South Carolina: 2013-2030

Workforce Needs in 2013

Assessing the workforce needs of South Carolina starts with an examination of the current industry composition of employment across the state. In 2013, total employment is 1,887,445, according to the Current Employment Statistics (CES) released by the U.S. Bureau of Labor Statistics (BLS). The CES program surveys businesses and government agencies to determine (among other things) the total number of employees on all payrolls statewide. This total number can be broken down at the industry level, as displayed in Appendix A. Figure 1 below summarizes the top industry supersectors.[5]

[5] Supersectors are standard categories of aggregated industries defined by the BLS.

Figure 1 – Total South Carolina Employment by Industry Supersector (2013)



In 2013, the largest industry supersectors in South Carolina (by total employment) are Retail Trade and Health Care & Social Assistance. These are followed closely by Manufacturing, Accommodation & Food Services, and Education Services.

Appendix A also presents estimated employment projections at the industry level for 2020 and 2030. These projections are based on forecasting estimates originally developed jointly by the South Carolina Department of Commerce (Commerce) and the South Carolina Department of Employment and Workforce (DEW).[6] These estimates suggest that the average annual rate of employment growth across all industries between 2013 and 2030 is expected to be approximately 1.7 percent.

All employment projections in this study reflect estimates based primarily upon historical data trends. As such, these projections should be interpreted as providing a set of baseline estimates of what to expect, on average, for South Carolina's future employment growth. It does not take into account various unexpected economic

[6] Projected estimates of employment in 2020 reflect those provided by Commerce and DEW. The Division of Research generated all projected estimates of employment in 2030 by using standard time-series regression analysis and by using the 2020 employment figures as inputs to the modeling process.

"shocks." For example, when the soon-to-be-completed widening of the Panama Canal occurs, it should introduce a higher level of demand at the Port of Charleston and thus increase the demand for South Carolina ground transportation. Similarly, if a major military facility closed or faced significant reductions, there would likely be a corresponding decline in household spending activity that would lead to a decrease in demand across many industries. Rather than assessing the probability of these (and other) economic shocks and incorporating them into the employment projections, this study provides baseline estimates that can be used by multiple policymakers who may assign different probabilities to various economic shocks.

The five industry supersectors with the highest anticipated rates of growth are:

- Health Care and Social Assistance: 3.40%
- Professional, Scientific, and Technical Services: 3.36%
- Construction: 3.08%
- Admin. and Support and Waste Management and Remediation: 2.73%
- Transportation and Warehousing 2.65%

Because Health Care and Social Assistance is projected to grow the fastest over the next 17 years and is currently ranked second in total employment, it will take over as the biggest industry supersector by 2030, surpassing Retail Trade. Table 1 displays the industry supersectors with the highest current and projected levels of total employment in South Carolina, illustrating this projected change.

These leading industry supersectors make sense, particularly the rise in health care employment. Nationwide, the health care industry already employs 1 out of every 8

Table 1 – South Carolina Industry Supersectors with Highest Levels of Total Employment: 2013 and 2030 (Projected)

Industry Supersector	Current (2013)		Industry Supersector	Projected (2030)
Retail Trade	220,647		Health Care and Social Assistance	339,119
Health Care and Social Assistance	214,841		Retail Trade	280,677
Manufacturing	198,858		Manufacturing	235,810
Accommodation and Food Services	180,544		Accommodation and Food Services	223,876
Educational Services	161,081		Educational Services	209,615

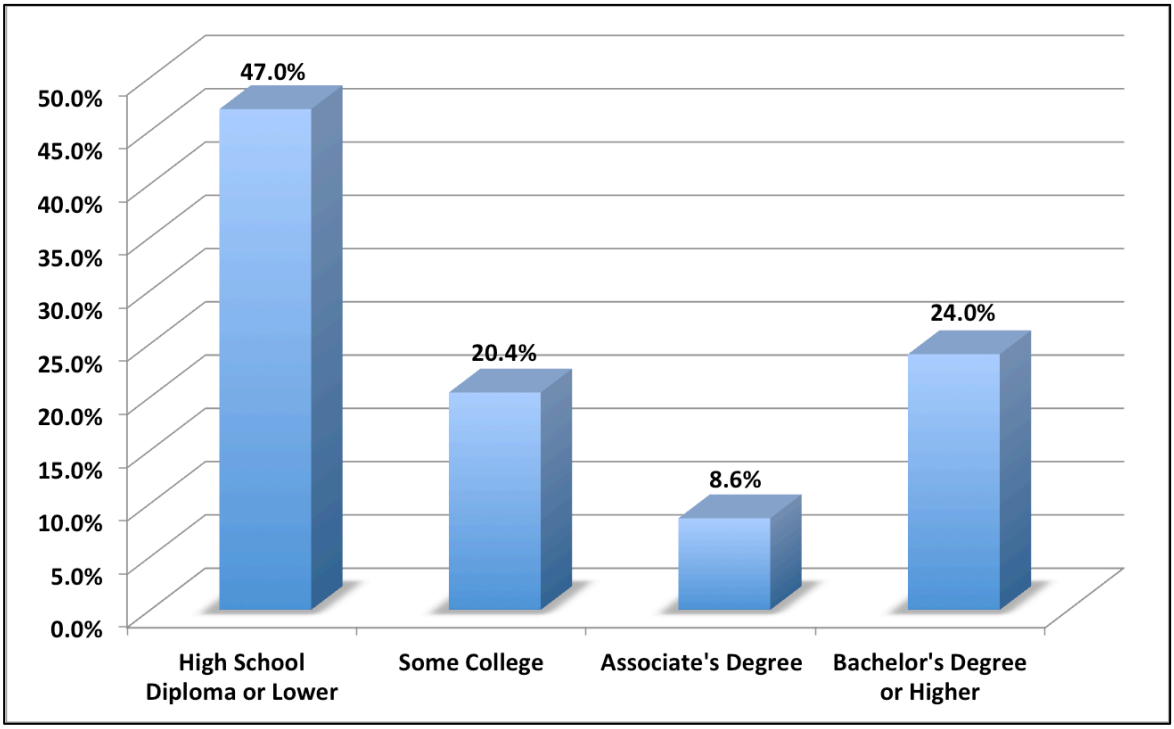
Americans. In addition, health care services are expected to grow at the fastest pace among all employment categories, up to 40 percent during the next decade.[7] Among the industry supersectors with the highest expected levels of growth, it is notable that both the Construction category and the Professional, Scientific, & Technical Services categories only comprise four percent of current total employment, yet rank immediately behind Health Care & Social Assistance, which comprises 13 percent of current total employment. The largest industries in South Carolina will not be the exclusive drivers of employment demand going forward.

These figures also raise questions regarding specific occupations and education levels. For example, while it is widely acknowledged that growth in the health care industry is increasing nationwide largely because of the aging baby-boomer generation, it is important to also know what education levels are necessary for the new jobs that will accompany this industry's growth. Similarly, any growth in professional, scientific, and technical services will require education and job training for employees, but what are the specific types of education necessary? Does South Carolina have a workforce that is prepared to meet the requirements of these positions?

To answer these questions, data on employment projections must be matched up with industry-level occupation data. The Division of Research gathered all data available on the occupational breakdown of industries within South Carolina and then matched each occupation to the associated level of education required to obtain an entry-level position within the occupation. Appendix B details the major findings from this matching by occupation, which is summarized in Figure 2 (next page).

[7] U.S. Bureau of Labor Statistics

Figure 2 – Percentage of South Carolina Jobs in 2013 by Required Educational Attainment



This profile of the current South Carolina workforce shows that approximately 53 percent of all current jobs in South Carolina require higher education. Specifically, 20.4 percent require some college,[8] 8.6 percent require an associate's degree, and 24.0 percent require a bachelor's degree or higher.

…while a majority of all jobs in South Carolina require higher education, the specific types of higher education (e.g., degree type) vary significantly across occupations.

It is also important to recognize from this profile that the percentage of all current jobs requiring either some college or an associate's degree (29.0%) is slightly greater than the percentage of all current jobs requiring a bachelor's degree or higher (24.0%). This illustrates the diversity of higher education required across industries and occupations within South Carolina. Table 2 (next page) further highlights this

[8] The higher education category denoted as "some college" is defined as having completed either (1) college coursework without obtaining a degree or (2) specific postsecondary training.

phenomenon by displaying the largest occupations in South Carolina. Notice that of the ten largest occupations, eight require higher education. Yet none require a bachelor's degree or higher. Thus, while a majority of all jobs in South Carolina require higher education, the specific types of higher education (e.g., degree type) vary significantly across occupations.

Table 2 – South Carolina Occupations with Highest Total Employment in 2013, by Education Requirement

	Occupation	Education Required	Total Number of Employees
31-1012	Nursing Aides, Orderlies, and Attendants	Some College	85,881
29-1111	Registered Nurses	Associate	63,756
29-2061	Licensed Practical and Licensed Vocational Nurses	Some College	46,844
25-1000	Postsecondary Teachers	Doctoral	41,522
41-2031	Retail Salespersons	Less than High School	36,048
11-1021	General and Operations Managers	Associate	33,396
39-5012	Hairdressers, Hairstylists, and Cosmetologists	Some College	31,229
51-1011	First-Line Supervisors of Production and Operating Workers	Some College	31,229
15-1150	Computer Support Specialists	Some College	30,535
43-9061	Office Clerks, General	High School Diploma	30,255

Workforce Needs in 2020 and 2030

There are two primary factors that influence future employment demand. The first factor is employment growth. As the South Carolina economy expands and the number of available jobs rises, this naturally leads to an increase in demand for workers in various industries. Part of the state's future employment demand can therefore be estimated by examining the industries that will experience employment growth (or contraction) between 2013 and 2030 and then determining which occupations will be affected as a result. The educational requirements for each occupation can then be linked to these employment changes to determine how the overall educational requirements for the workforce will change with employment growth. The second factor influencing future employment demand is workforce replacement. Workforce replacement simply refers to the need to replace workers who retire or otherwise permanently leave an occupation. Even in an

economy with zero employment growth, some workers will move out of the local region or retire and leave open positions that have to be filled. Table 3 summarizes the projected total number of job openings in 2020 and 2030 that arise from a combination of these two factors.[9]

Table 3 – Approximate Total South Carolina Job Openings by Education Requirement

	2020	2030	Percentage (2030)
High School Diploma or Lower	370,339	740,679	50.6%
Some College	120,249	240,498	16.4%
Associate's Degree	68,260	136,521	9.3%
Bachelor's Degree or Higher	172,623	345,244	23.6%
Totals	***731,471***	***1,462,942***	***N/A***

Over the next 17 years, there will be a demand for approximately 1.46 million workers that results from a combination of employment growth and workforce replacement. Approximately 553,884 of these jobs (37.9%) will result from employment growth, while the remaining majority 909,058 (62.1%) will come from workforce replacement needs.

Between 2013 and 2030, a greater percentage of jobs requiring higher education in South Carolina will come from those requiring bachelor's degrees or higher.

There will also be changes between 2013 and 2030 regarding educational attainment within occupations requiring higher education. Table 4 (next page) illustrates these changes. Between 2013 and 2030, a greater percentage of jobs requiring higher education in South Carolina will come from those requiring bachelor's degrees or higher. Currently 45.3 percent of all jobs requiring higher education are those that require a bachelor's degree or higher, which will increase to 47.8 percent by 2030. A similar trend exists for the percentage of jobs requiring associate's degrees.

[9] The Division of Research generated all projected estimates through standard time-series regression analysis, which also incorporated national BLS employment projections through 2020.

Table 4 – Percentage of Positions Requiring Higher Education by Degree Type			
	2013	2030	Difference
Some College	38.5%	33.2%	-5.3%
Associate Degree	16.2%	18.9%	+2.7%
Bachelor's Degree or Higher	45.3%	47.8%	+2.5%

Currently 16.2 percent of all jobs requiring higher education are those that require an associate's degree; this will increase to 18.9 percent by 2030. Appendices A and B at the end of this report provide occupation-level detail on these projected employment changes.

To summarize so far, 53 percent of all jobs in South Carolina currently require higher education. This 53 percent is divided almost evenly between jobs that require some college or an associate's degree and jobs that require a bachelor's degree or higher. Of the ten largest occupations in South Carolina, eight require higher education and the nursing field alone comprises the top three. Over the next 17 years, the highest levels of employment growth will occur in the industries of Health Care & Social Assistance and Professional, Scientific, & Technical Services. Because of these high levels of projected growth, Health Care & Social Assistance will surpass Retail Trade as the single biggest industry employer by 2030.

Section III – South Carolina's Education-Workforce Mismatch

Section II of this study estimated the current and projected workforce demand in South Carolina broken down by occupation and by education requirements. The next step in determining the education-workforce matchup in South Carolina is to examine the current and projected workforce supply. Regardless of what the estimates on employment demand show, they must be compared with the supply of workers in the economy to determine whether there is a surplus or a shortage of workers in the various occupations throughout the state.

In order to determine workforce supply, data were first gathered from the American Community Survey, which is administered by the U.S. Census Bureau. Specifically, current and projected population data were obtained on all working age (18-65) South Carolinians by educational attainment. These data were then adjusted to reflect current labor force participation rates and compared with the employment projections laid out in Section II. Table 5 summarizes these comparisons.

Table 5 – The South Carolina Education-Workforce Mismatch in 2030

	Increase in Population Through 2030 (Supply)	Increase in Employment through 2030 (Demand)	Absolute Difference	Adjusted Difference
High School Diploma or Lower	154,394	288,860	134,466	106,182
Some College	67,014	56,624	-10,390	4,656
Associate's Degree	28,250	66,844	38,594	44,010
Bachelor's Degree or Higher	78,840	141,556	62,716	70,540
Totals[10]	***328,498***	***553,884***	***225,386***	***225,388***

Between 2013 and 2030, economic growth alone is expected to produce approximately 553,884 total new jobs in South Carolina. Over the same time period, the U.S. Census Bureau estimates that, at current growth rates, there will be an increase in the population of 328,498 people between the ages of 18 and 65 who will be actively participating in the labor force. The difference between these two numbers at each education level reflects the shortage or surplus of workers that South Carolina will experience. The last two columns of Table 5 reflect two breakdowns of these differences by education level: the absolute difference and the adjusted difference.

The absolute difference is simply the projected increase in supply subtracted from the projected increase in demand. The adjusted difference, however, takes into account the fact that there are certain occupations in which a large portion of the current workforce has a higher educational background than the minimally required

[10] The small difference in the totals for Absolute Difference and Adjusted Difference is due to rounding.

level as documented by the BLS. For example, an analysis of BLS data from Georgetown University's Public Policy Institute shows that nationwide, approximately 25 percent of all jobs listed by the BLS as requiring a high school diploma are being filled by people with some college.[11]

In general, occupations in which there are large gaps between the educational job requirements (as listed by the BLS) and the actual background of the employees that fill these jobs imply that these BLS data may provide an inaccurate representation of the educational qualifications. As a result, the Division of Research specifically adjusted the workforce shortage estimates to reflect major differences between BLS-documented education qualifications and the actual employment data. These adjustments are based on a national workforce analysis conducted by Georgetown University that specifically analyzes this data bias.[12] The adjusted differences reported in Table 5 provide the key findings of this study.

By the year 2030, employment growth above and beyond growth in the population will lead to an excess demand of over 119,000 workers with higher education. Approximately 59.2 percent of these workers will require a bachelor's degree or higher, 36.9 percent will require an associate's degree, and 3.9 percent will require some college. The complete occupational breakdown of this excess demand is listed in Appendix C. The top ten occupations broken down by the education categories of associate's degree and bachelor's degree or higher are shown in Figures 3 and 4 below.

[11] Carnevale, et al. (2013)

[12] Four assumptions were made to the estimated workforce shortage: (1) 41 percent of jobs listed as requiring less than a high school diploma were assumed to actually require a high school diploma; (2) 25 percent of all jobs listed as requiring a high school diploma were assumed to actually require some college; (3) 9 percent of all jobs listed as requiring a high school diploma were assumed to actually require an associate's degree; (4) 13 percent of all jobs listed as requiring a high school diploma were assumed to actually require a bachelor's degree.

Figure 3 – South Carolina Occupations Requiring an Associate's Degree with Highest Projected Shortages in 2030

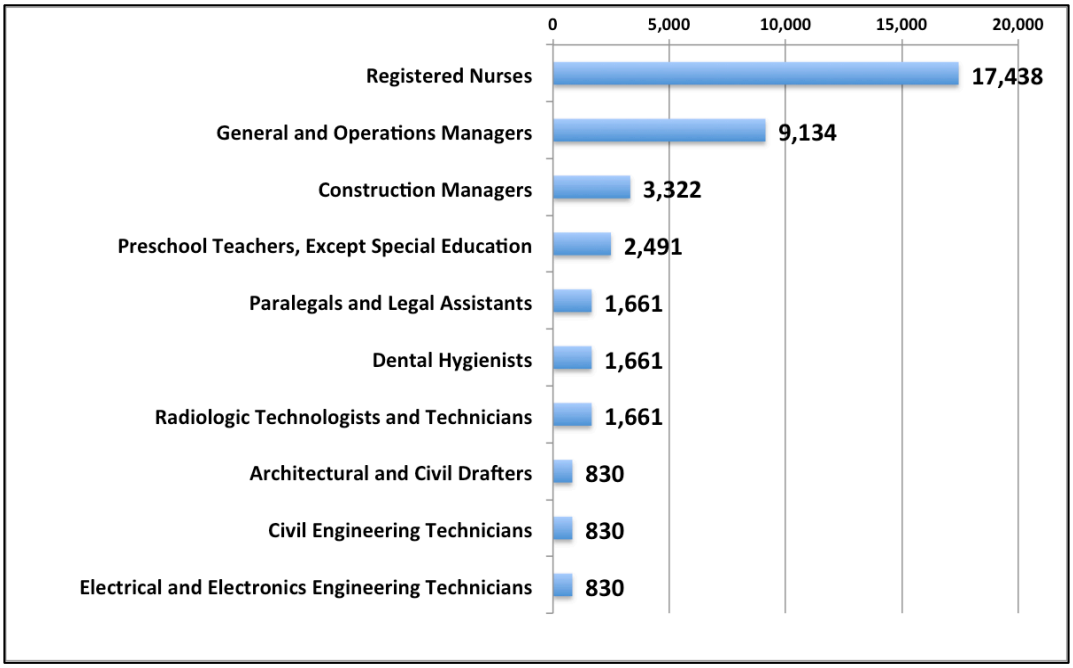
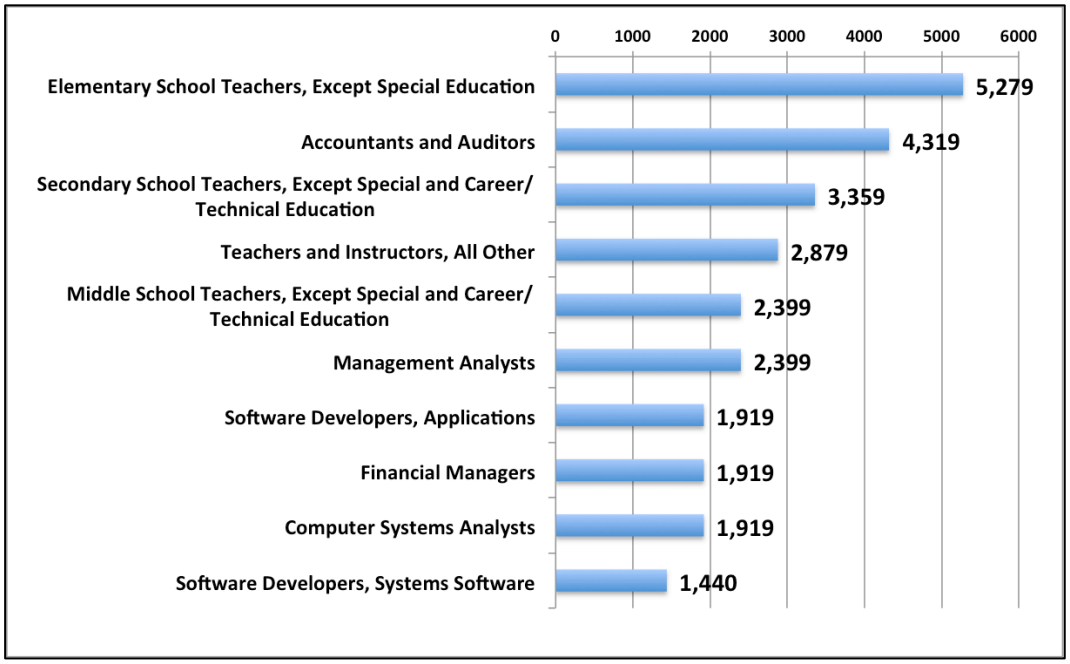


Figure 4 – South Carolina Occupations Requiring a Bachelor's Degree or Higher with Highest Projected Shortages in 2030



Perhaps the most striking aspect of these figures is the disproportionately large share of the workforce shortage in 2030 that will come from registered nurses. Registered nurses comprise 39.6 percent of all excess demand for associate's degree workers and 7.7 percent of the total workforce shortage.[13] The occupation comprising the second highest share of the total shortage is "General and Operations Managers," at 4.1 percent.

The teaching profession is represented in both degree categories, including the occupations of preschool teachers, K-12 teachers, and other specialty teachers and instructors. In sum, these occupations comprise 7.3 percent of the workforce shortage. Computer and engineering professions are also represented in both the associate's degree shortages and the bachelor's degree or higher shortages, comprising 2.8 percent of the total workforce shortage.

Section IV – Discussion

When examining the results of this study, it is important to clearly distinguish the types of higher education that will be in demand in the coming years from the types of higher education that will not only be in demand, but also be likely to create a workforce shortage. In terms of sheer demand, approximately one-third of all jobs requiring higher education currently require some college, and this percentage is expected to persist through the year 2030.

This is consistent with, for example, recent studies that highlight the increasing demand for STEM (science, technology, engineering, and mathematics) workers. A recent report published by the Brookings Institution shows that half of all STEM jobs do not require a four-year degree.[14] These "other" STEM jobs are largely positioned in manufacturing, health care, and construction. According to this report, "the excessively professional definition of STEM jobs has led to missed opportunities to

[13] As of 2013, South Carolina state law requires an individual to earn an associate's degree as part of the qualifications to become a registered nurse. Though there has been speculation that this requirement will be increased to a bachelor's degree, there is currently no official change planned for the state of South Carolina.
[14] Rothwell (2013)

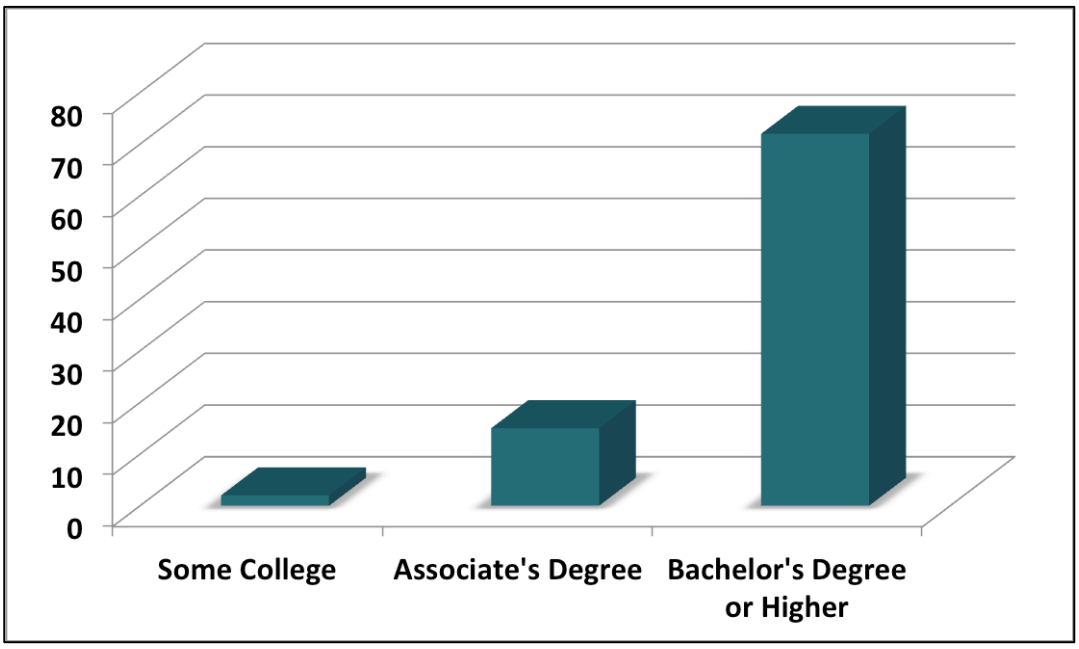
identify and support valuable training and career development." In other words, by assuming that nearly all of the increase in demand for STEM workers consists of workers with bachelor's degrees or higher, the need for STEM workers with associate's degrees and other professional certifications will be ignored. It is important to recognize that a significant portion of jobs that require higher education in South Carolina require specialized training and not four-year bachelor's degrees. This is true in 2013 and will be true in 2030.

…for South Carolina policymakers, it is important to simultaneously recognize the high demand for workers with some college as well as the growing need for workers with associate's degrees and bachelor's degrees or higher.

Nevertheless, despite an ongoing high demand for workers with some college, the projected shortage of workers in 2030 will largely be concentrated among workers with associate's degrees and bachelor's degrees or higher, as outlined in Table 5. Thus, for South Carolina policymakers, it is important to simultaneously recognize the high demand for workers with some college as well as the growing need for workers with associate's degrees and bachelor's degrees or higher.

Another important aspect of the emerging workforce shortage in South Carolina is the fact that the distribution of occupations within each degree type varies, as Figure 5 indicates.

Figure 5 – Number of Higher Education Occupations Included in the 2030 Workforce Shortage, by Degree Type



Among the three higher education categories where a workforce shortage is expected, the number of occupations that this will affect is much higher for those requiring bachelor's degrees or higher than those requiring associate's degrees or some college. As previously noted, the workforce shortage resulting from the need for more workers with associate's degrees is largely concentrated among registered nurses. The workforce shortage resulting from the need for more employees with some college is primarily concentrated in the occupations of Computer Support Specialists and Residential Advisors.

Section V – Conclusion

One of the major challenges facing South Carolina as it continues to recover from the Great Recession is how to improve the education and skillsets of its citizens. This is an important and necessary step towards creating a workforce that is capable of occupying the jobs that are being created in an economy that is increasingly knowledge-based and in which the demand for higher education is constantly on the rise. To aid in this goal, the *Competing Through Knowledge Initiative* of the South

Carolina Business Leaders Higher Education Council commissioned this study to analyze the current and projected workforce needs of the South Carolina labor market through the year 2030 by education and by occupation. Comparing these workforce needs to the current and projected education profiles of the South Carolina labor force provides a means to estimate any workforce shortages or surpluses over the next 17 years.

The key findings of this study indicate that a workforce shortage will emerge over the next 17 years chiefly in occupations requiring bachelor's degrees or higher and associate's degrees. To prevent this shortage, South Carolina will require an annual increase of 4,149 graduates with a bachelor's degree or higher and 2,588 graduates with an associate's degree between 2013 and 2030. Registered nurses are in highest demand – encompassing nearly 40 percent of the workforce shortage due to associate's degrees. In addition, workers who have obtained some college or other postsecondary non-degree award will also remain in high demand. These workers currently comprise over one-third of all positions requiring higher education in South Carolina and will maintain a sizeable presence through the year 2030.

The long-run health and strength of any economy is largely the result of consistent employment and income growth. For South Carolina to create opportunities for its citizens to have access to good jobs and higher wages, it must create a workforce that is equipped with the skillsets that are in demand in the labor market. This will not only benefit individual citizens by improving their job prospects, but it will also benefit the state as a whole by making it more attractive to firms that see South Carolina as having an educated and skilled workforce that is ready to shape the future.

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Appendix A: Current and Projected South Carolina Total Employment by Industry[15]

Industry Code	*Industry Title*	*Current (2013)*	*Projected (2020)*	*Projected (2030)*	*Annual Change*
N/A	Total All Industries	1,887,445	2,160,803	2,434,161	1.70%
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67	**Self-Employed and Unpaid Family Workers, All Jobs**	**145,791**	**154,216**	**162,641**	**0.68%**
6010	Self-Employed Workers, All Jobs	144,042	152,438	160,834	0.69%
7010	Unpaid Family Workers, All Jobs	1,749	1,778	1,807	0.20%
101000	Goods-Producing	300,221	338,877	377,533	1.51%
101100	Natural Resources and Mining	29,335	30,640	31,945	0.52%
101200	Construction	72,028	90,903	109,778	3.08%
101300	Manufacturing	198,858	217,334	235,810	1.09%
102000	Services-Providing	1,441,433	1,667,710	1,893,987	1.85%
102100	Trade, Transportation, and Utilities	329,701	377,665	425,629	1.71%
102200	Information	23,265	25,388	27,511	1.07%
102300	Financial Activities	87,029	95,649	104,269	1.17%
102400	Professional and Business Services	195,772	243,320	290,868	2.86%
102500	Education and Health Services	375,922	462,328	548,734	2.70%
102600	Leisure and Hospitality	205,952	232,398	258,844	1.51%
102700	Other Services (Except Government)	80,296	94,486	108,676	2.08%
102800	Government	143,496	136,476	129,456	-0.58%
102900	Unclassified	145,791	154,216	162,641	0.68%
110000	**Agriculture, Forestry, Fishing and Hunting**	**28,240**	**29,529**	**30,818**	**0.54%**
113000	Forestry and Logging	2,986	3,120	3,254	0.53%
114000	Fishing, Hunting and Trapping	25	24	23	-0.47%
115000	Support Activities for Agriculture and Forestry	2,188	2,584	2,980	2.13%
117000	Crop and Animal Production - Total	23,041	23,801	24,561	0.39%
210000	**Mining**	**1,095**	**1,111**	**1,127**	**0.17%**
212000	Mining (except Oil and Gas)	1,062	1,078	1,094	0.18%
213000	Support Activities for Mining	33	33	33	0.00%
220000	**Utilities**	**10,635**	**11,558**	**12,481**	**1.02%**
221000	Utilities	10,635	11,558	12,481	1.02%
230000	**Construction**	**72,028**	**90,903**	**109,778**	**3.08%**
236000	Construction of Buildings	17,419	20,529	23,639	2.10%

[15] Industry codes starting with 10 summarize all major industry supersectors, while the bolded categories reflect supersectors that contain listed subcategories that are broken down further. For example, the manufacturing industry is broken down into 19 subcategories, each of which is listed independently.

Industry Code	*Industry Title*	*Current (2013)*	*Projected (2020)*	*Projected (2030)*	*Annual Change*
237000	Heavy and Civil Engineering Construction	10,702	13,374	16,046	2.94%
238000	Specialty Trade Contractors	43,907	57,000	70,093	3.51%
310000	**Manufacturing**	**198,858**	**217,334**	**235,810**	**1.09%**
311000	Food Manufacturing	16,294	17,632	18,970	0.97%
312000	Beverage and Tobacco Product Manufacturing	521	516	511	-0.11%
313000	Textile Mills	14,757	12,853	10,949	-1.52%
314000	Textile Product Mills	3,285	2,912	2,539	-1.34%
315000	Apparel Manufacturing	1,111	582	53	-5.60%
321000	Wood Product Manufacturing	7,246	9,135	11,024	3.07%
322000	Paper Manufacturing	10,552	10,336	10,120	-0.24%
323000	Printing and Related Support Activities	4,107	3,901	3,695	-0.59%
325000	Chemical Manufacturing	18,365	17,764	17,163	-0.39%
326000	Plastics and Rubber Products Manufacturing	18,162	23,756	29,350	3.62%
327000	Nonmetallic Mineral Product Manufacturing	7,117	8,547	9,977	2.36%
331000	Primary Metal Manufacturing	4,498	4,843	5,188	0.90%
332000	Fabricated Metal Product Manufacturing	22,494	25,041	27,588	1.33%
333000	Machinery Manufacturing	20,314	21,504	22,694	0.69%
334000	Computer and Electronic Product Manufacturing	5,594	5,726	5,858	0.28%
335000	Electrical Equipment, Appliance, and Component Manufacturing	9,438	9,689	9,940	0.31%
336000	Transportation Equipment Manufacturing	25,454	32,700	39,946	3.35%
337000	Furniture and Related Product Manufacturing	2,306	2,542	2,778	1.20%
339000	Miscellaneous Manufacturing	7,039	7,134	7,229	0.16%
420000	**Wholesale Trade**	**54,920**	**62,152**	**69,384**	**1.55%**
423000	Merchant Wholesalers, Durable Goods	29,332	32,279	35,226	1.18%
424000	Merchant Wholesalers, Nondurable Goods	17,515	19,748	21,981	1.50%
425000	Wholesale Electronic Markets and Agents and Brokers	8,073	10,125	12,177	2.99%
440000	**Retail Trade**	**220,647**	**250,662**	**280,677**	**1.60%**
441000	Motor Vehicle and Parts Dealers	25,958	30,647	35,336	2.13%
442000	Furniture and Home Furnishings Stores	6,281	7,423	8,565	2.14%
443000	Electronics and Appliance Stores	5,825	6,128	6,431	0.61%
444000	Building Material and Garden Equipment and Supplies Dealers	18,148	22,049	25,950	2.53%

Industry Code	*Industry Title*	*Current (2013)*	*Projected (2020)*	*Projected (2030)*	*Annual Change*
445000	Food and Beverage Stores	42,484	44,550	46,616	0.57%
446000	Health and Personal Care Stores	15,285	19,145	23,005	2.97%
447000	Gasoline Stations	16,397	17,014	17,631	0.44%
448000	Clothing and Clothing Accessories Stores	19,685	23,253	26,821	2.13%
451000	Sporting Goods, Hobby, Book, and Music Stores	7,094	7,791	8,488	1.16%
452000	General Merchandise Stores	50,009	58,493	66,977	2.00%
453000	Miscellaneous Store Retailers	10,214	10,747	11,280	0.61%
454000	Nonstore Retailers	3,267	3,422	3,577	0.56%
480000	**Transportation and Warehousing**	**43,499**	**53,293**	**63,087**	**2.65%**
481000	Air Transportation	726	859	992	2.16%
482000	Rail Transportation	2,150	2,182	2,214	0.18%
483000	Water Transportation	248	254	260	0.28%
484000	Truck Transportation	16,072	19,852	23,632	2.77%
485000	Transit and Ground Passenger Transport	2,155	2,648	3,141	2.69%
487000	Scenic and Sightseeing Transportation	456	586	716	3.35%
488000	Support Activities for Transportation	8,664	10,486	12,308	2.47%
491100	Postal Service	7,516	6,426	5,336	-1.71%
492000	Couriers and Messengers	5,534	6,967	8,400	3.05%
493000	Warehousing and Storage	7,494	9,459	11,424	3.08%
510000	**Information**	**23,265**	**25,388**	**27,511**	**1.07%**
511000	Publishing Industries	5,457	6,006	6,555	1.18%
512000	Motion Picture and Sound Recording Industries	1,859	1,945	2,031	0.54%
515000	Broadcasting (except Internet)	2,454	2,493	2,532	0.19%
517000	Telecommunications	11,899	12,976	14,053	1.06%
518000	Internet Service Providers, Web Search Portals, and Data Processing Services	1,249	1,517	1,785	2.52%
519000	Other Information Services	347	451	555	3.53%
520000	**Finance and Insurance**	**62,812**	**67,886**	**72,960**	**0.95%**
521000	Monetary Authorities - Central Bank	40	46	52	1.76%
522000	Credit Intermediation and Related Activities	33,978	36,197	38,416	0.77%
523000	Securities, Commodity Contracts, and Other Financial Investments and Related Activities	2,774	3,469	4,164	2.95%
524000	Insurance Carriers and Related Activities	25,769	27,855	29,941	0.95%
525000	Funds, Trusts, and Other Financial Vehicles	251	319	387	3.19%
530000	**Real Estate and Rental and Leasing**	**24,217**	**27,763**	**31,309**	**1.72%**
531000	Real Estate	17,381	19,901	22,421	1.71%

Industry Code	*Industry Title*	*Current (2013)*	*Projected (2020)*	*Projected (2030)*	*Annual Change*
540000	**Professional, Scientific, and Technical Services**	**66,430**	**85,415**	**104,400**	**3.36%**
541000	Professional, Scientific, and Technical Services	66,430	85,415	104,400	3.36%
550000	**Management of Companies and Enterprises**	**13,746**	**15,453**	**17,160**	**1.46%**
551000	Management of Companies and Enterprises	13,746	15,453	17,160	1.46%
560000	**Administrative and Support and Waste Management and Remediation Services**	**115,596**	**142,452**	**169,308**	**2.73%**
561000	Administrative and Support Services	104,504	128,978	153,452	2.76%
562000	Waste Management and Remediation Service	11,092	13,474	15,856	2.53%
610000	**Educational Services**	**161,081**	**185,348**	**209,615**	**1.77%**
611000	Educational Services	161,081	185,348	209,615	1.77%
620000	**Health Care and Social Assistance**	**214,841**	**276,980**	**339,119**	**3.40%**
621000	Ambulatory Health Care Services	67,357	96,233	125,109	5.04%
622000	Hospitals	86,153	100,507	114,861	1.96%
623000	Nursing and Residential Care Facilities	37,204	47,018	56,832	3.10%
624000	Social Assistance	24,127	33,222	42,317	4.43%
710000	**Arts, Entertainment, and Recreation**	**25,408**	**30,188**	**34,968**	**2.21%**
711000	Performing Arts, Spectator Sports, and Related Industries	3,403	4,191	4,979	2.72%
712000	Museums, Historical Sites, and Similar Institution	1,114	1,334	1,554	2.32%
713000	Amusement, Gambling, and Recreation Industries	20,891	24,663	28,435	2.12%
720000	**Accommodation and Food Services**	**180,544**	**202,210**	**223,876**	**1.41%**
721000	Accommodation	27,393	29,994	32,595	1.12%
722000	Food Services and Drinking Places	153,151	172,216	191,281	1.46%
810000	**Other Services (Except Government)**	**80,296**	**94,486**	**108,676**	**2.08%**
811000	Repair and Maintenance	15,993	19,716	23,439	2.74%
812000	Personal and Laundry Services	16,118	17,263	18,408	0.84%
813000	Religious, Grantmaking, Civic, Professional, and Similar Organizations	43,478	52,620	61,762	2.47%
814000	Private Households	4,707	4,887	5,067	0.45%
900000	**Government**	**143,496**	**136,476**	**129,456**	**-0.58%**
910000	Total Federal Government Employment	29,329	26,139	22,949	-1.28%
920000	State Government, Excluding Education and Hospitals	45,536	40,903	36,270	-1.20%
930000	Local Government, Excluding Education and Hospitals	68,631	69,434	70,237	0.14%

Industry Code	*Industry Title*	*Current (2013)*	*Projected (2020)*	*Projected (2030)*	*Annual Change*
999100	Federal Government, Excluding Post Office	21,813	19,713	17,613	-1.13%

Appendix B: Current Occupation Breakdown of South Carolina Employment by Education Requirement[16]

Occupation Title	Less than High School	High School Diploma	Some College	Associate's Degree	Bachelor's Degree or Higher
Accountants and Auditors					17,870
Administrative Services Managers		2,881			
Adult Basic and Secondary Education and Literacy Teachers and Instructors					1,986
Advertising Sales Agents		1,441			
Aerospace Engineers					1,986
Aircraft Mechanics and Service Technicians			7,807		
Amusement and Recreation Attendants	2,403				
Appraisers and Assessors of Real Estate		1,441			
Architects, Except Landscape and Naval					1,986
Architectural and Civil Drafters				3,036	
Architectural and Engineering Managers					1,986
Assemblers and Fabricators, All Other		2,881			
Automotive and Watercraft Service Attendants	1,202				
Automotive Body and Related Repairers		1,441			
Automotive Service Technicians and Mechanics		7,204			
Bakers	1,202				
Bartenders	3,605				
Bill and Account Collectors		4,322			
Billing and Posting Clerks		5,763			
Biological Technicians					1,986
Bookkeeping, Accounting, and Auditing Clerks		18,729			

[16] Not all South Carolina employment data could be matched to specific occupations, though the match rate was high. The total number of jobs broken out in Appendix B reflects approximately 99.1% of total South Carolina employment.

Occupation Title	Less than High School	High School Diploma	Some College	Associate's Degree	Bachelor's Degree or Higher
Brickmasons and Blockmasons		1,441			
Bus and Truck Mechanics and Diesel Engine Specialists		2,881			
Bus Drivers, School or Special Client		4,322			
Bus Drivers, Transit and Intercity		1,441			
Business Operations Specialists, All Other		10,085			
Butchers and Meat Cutters	1,202				
Cabinetmakers and Bench Carpenters		1,441			
Career/Technical Education Teachers, Secondary School					1,986
Cargo and Freight Agents		1,441			
Carpenters		10,085			
Cashiers	26,435				
Cement Masons and Concrete Finishers	1,202				
Chefs and Head Cooks		1,441			
Chemists					1,986
Chief Executives					3,971
Child, Family, and School Social Workers					3,971
Childcare Workers		12,966			
Civil Engineering Technicians				3,036	
Civil Engineers					3,971
Claims Adjusters, Examiners, and Investigators		2,881			
Cleaners of Vehicles and Equipment	2,403				
Clergy					3,971
Clinical, Counseling, and School Psychologists					3,194
Coaches and Scouts		2,881			
Coating, Painting, and Spraying Machine Setters, Operators, and Tenders		1,441			
Combined Food Preparation and Serving Workers, Including Fast Food	22,830				
Community and Social Service Specialists, All Other					1,986
Compensation, Benefits, and Job Analysis Specialists					1,986

Occupation Title	Less than High School	High School Diploma	Some College	Associate's Degree	Bachelor's Degree or Higher
Compliance Officers					3,971
Computer and Information Systems Managers					3,971
Computer Occupations, All Other					1,986
Computer Programmers					3,971
Computer Support Specialists			30,535		
Computer Systems Analysts					7,942
Computer-Controlled Machine Tool Operators, Metal and Plastic		1,441			
Computer, Automated Teller, and Office Machine Repairers			7,807		
Construction and Building Inspectors		1,441			
Construction Laborers	8,411				
Construction Managers				12,144	
Cooks, Fast Food	3,605				
Cooks, Institution and Cafeteria	3,605				
Cooks, Restaurant	7,210				
Cooks, Short Order	1,202				
Correctional Officers and Jailers		4,322			
Cost Estimators					3,971
Counter and Rental Clerks	3,605				
Counter Attendants, Cafeteria, Food Concession, and Coffee Shop	3,605				
Couriers and Messengers		1,441			
Court, Municipal, and License Clerks		1,441			
Customer Service Representatives		21,611			
Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic		1,441			
Data Entry Keyers		1,441			
Database Administrators					1,986
Demonstrators and Product Promoters		1,441			
Dental Assistants			15,615		
Dental Hygienists				6,072	
Dentists, General					3,194
Detectives and Criminal Investigators		1,441			
Dining Room and Cafeteria Attendants and Bartender Helpers	3,605				
Directors, Religious Activities and Education					1,986

Occupation Title	Less than High School	High School Diploma	Some College	Associate's Degree	Bachelor's Degree or Higher
Dishwashers	3,605				
Dispatchers, Except Police, Fire, and Ambulance		1,441			
Door-to-Door Sales Workers, News and Street Vendors, and Related Workers		1,441			
Driver/Sales Workers		4,322			
Drywall and Ceiling Tile Installers	1,202				
Editors					1,986
Education Administrators, Elementary and Secondary School					8,946
Education Administrators, Postsecondary					4,473
Education, Training, and Library Workers, All Other					1,986
Educational, Guidance, School, and Vocational Counselors					8,946
Electrical and Electronic Equipment Assemblers		1,441			
Electrical and Electronics Engineering Technicians				3,036	
Electrical Engineers					1,986
Electrical Power-Line Installers and Repairers		1,441			
Electricians		5,763			
Electronics Engineers, Except Computer					1,986
Elementary School Teachers, Except Special Education					21,842
Eligibility Interviewers, Government Programs				3,036	
Emergency Medical Technicians and Paramedics			15,615		
Engineers, All Other					1,986
Environmental Scientists and Specialists, Including Health					1,986
Executive Secretaries and Executive Administrative Assistants		12,966			
Extruding and Drawing Machine Setters, Operators, and Tenders, Metal and Plastic		1,441			
Farmers, Ranchers, and Other Agricultural Managers		10,085			

Occupation Title	Less than High School	High School Diploma	Some College	Associate's Degree	Bachelor's Degree or Higher
File Clerks		1,441			
Financial Analysts					3,971
Financial Managers					7,942
Financial Specialists, All Other					1,986
Firefighters			15,615		
First-Line Supervisors of Construction Trades and Extraction Workers		5,763			
First-Line Supervisors of Food Preparation and Serving Workers		7,204			
First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand		1,441			
First-Line Supervisors of Housekeeping and Janitorial Workers		1,441			
First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers		1,441			
First-Line Supervisors of Mechanics, Installers, and Repairers		4,322			
First-Line Supervisors of Non-Retail Sales Workers		4,322			
First-Line Supervisors of Office and Administrative Support Workers		14,407			
First-Line Supervisors of Personal Service Workers		2,881			
First-Line Supervisors of Police and Detectives		1,441			
First-Line Supervisors of Production and Operating Workers			31,229		
First-Line Supervisors of Retail Sales Workers		15,848			
First-Line Supervisors of Transportation and Material-Moving Machine and Vehicle Operators		1,441			
Fitness Trainers and Aerobics Instructors		2,881			
Flight Attendants		1,441			
Food Batchmakers		1,441			
Food Preparation Workers	6,008				
Food Servers, Nonrestaurant	2,403				
Food Service Managers		2,881			

Occupation Title	Less than High School	High School Diploma	Some College	Associate's Degree	Bachelor's Degree or Higher
Gaming Dealers		1,441			
General and Operations Managers				33,396	
Graphic Designers					3,971
Hairdressers, Hairstylists, and Cosmetologists			31,229		
Health Educators					1,986
Health Technologists and Technicians, All Other			7,807		
Healthcare Social Workers					4,473
Healthcare Support Workers, All Other		1,441			
Heating, Air Conditioning, and Refrigeration Mechanics and Installers			15,615		
Heavy and Tractor-Trailer Truck Drivers		17,288			
Helpers--Electricians		1,441			
Helpers--Installation, Maintenance, and Repair Workers		1,441			
Helpers--Pipelayers, Plumbers, Pipefitters, and Steamfitters		1,441			
Helpers--Production Workers	3,605				
Highway Maintenance Workers		1,441			
Home Health Aides	13,218				
Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop	2,403				
Hotel, Motel, and Resort Desk Clerks		2,881			
Human Resources Assistants, Except Payroll and Timekeeping		1,441			
Human Resources, Training, and Labor Relations Specialists, All Other					5,957
Industrial Engineers					1,986
Industrial Machinery Mechanics		2,881			
Industrial Production Managers					1,986
Industrial Truck and Tractor Operators	4,806				
Information and Record Clerks, All Other		1,441			
Information Security Analysts, Web Developers, and Computer Network Architects					3,971
Inspectors, Testers, Sorters, Samplers, and Weighers		4,322			

Occupation Title	Less than High School	High School Diploma	Some College	Associate's Degree	Bachelor's Degree or Higher
Installation, Maintenance, and Repair Workers, All Other		1,441			
Instructional Coordinators					4,473
Insurance Claims and Policy Processing Clerks		2,881			
Insurance Sales Agents		4,322			
Insurance Underwriters					1,986
Interpreters and Translators					1,986
Interviewers, Except Eligibility and Loan		2,881			
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	19,225				
Kindergarten Teachers, Except Special Education					1,986
Laborers and Freight, Stock, and Material Movers, Hand	18,024				
Landscaping and Groundskeeping Workers	10,814				
Laundry and Dry-Cleaning Workers	1,202				
Lawyers					15,970
Legal Secretaries		1,441			
Librarians					4,473
Library Assistants, Clerical		1,441			
Library Technicians			7,807		
Licensed Practical and Licensed Vocational Nurses			46,844		
Lifeguards, Ski Patrol, and Other Recreational Protective Service Workers		1,441			
Light Truck or Delivery Services Drivers		8,644			
Loan Interviewers and Clerks		1,441			
Loan Officers		2,881			
Logisticians					1,986
Machine Feeders and Offbearers	1,202				
Machinists		2,881			
Maids and Housekeeping Cleaners	10,814				
Mail Clerks and Mail Machine Operators, Except Postal Service		1,441			
Maintenance and Repair Workers, General		12,966			
Management Analysts					9,928

Occupation Title	Less than High School	High School Diploma	Some College	Associate's Degree	Bachelor's Degree or Higher
Managers, All Other		7,204			
Manicurists and Pedicurists			7,807		
Market Research Analysts and Marketing Specialists					3,971
Marketing Managers					1,986
Massage Therapists			7,807		
Meat, Poultry, and Fish Cutters and Trimmers	1,202				
Mechanical Engineers					3,971
Medical and Clinical Laboratory Technicians				3,036	
Medical and Clinical Laboratory Technologists					1,986
Medical and Health Services Managers					3,971
Medical Assistants		5,763			
Medical Records and Health Information Technicians			7,807		
Medical Scientists, Except Epidemiologists					3,194
Medical Secretaries		5,763			
Medical Transcriptionists			7,807		
Meeting, Convention, and Event Planners					1,986
Mental Health and Substance Abuse Social Workers					1,986
Mental Health Counselors					4,473
Merchandise Displayers and Window Trimmers		1,441			
Middle School Teachers, Except Special and Career/Technical Education					9,928
Miscellaneous Agricultural Workers	4,806				
Mixing and Blending Machine Setters, Operators, and Tenders		1,441			
Mobile Heavy Equipment Mechanics, Except Engines		1,441			
Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders, Metal and Plastic		1,441			
Music Directors and Composers					1,986
Musicians and Singers		1,441			
Network and Computer Systems					5,957

Occupation Title	Less than High School	High School Diploma	Some College	Associate's Degree	Bachelor's Degree or Higher
Administrators					
Nonfarm Animal Caretakers	1,202				
Nursing Aides, Orderlies, and Attendants			85,881		
Occupational Therapists					4,473
Office and Administrative Support Workers, All Other		2,881			
Office Clerks, General		30,255			
Operating Engineers and Other Construction Equipment Operators		4,322			
Order Clerks		1,441			
Packaging and Filling Machine Operators and Tenders		2,881			
Packers and Packagers, Hand	4,806				
Painters, Construction and Maintenance	3,605				
Paper Goods Machine Setters, Operators, and Tenders		1,441			
Paralegals and Legal Assistants				6,072	
Parking Lot Attendants	1,202				
Parts Salespersons	1,202				
Payroll and Timekeeping Clerks		1,441			
Personal Care Aides	10,814				
Personal Care and Service Workers, All Other		1,441			
Personal Financial Advisors					3,971
Pest Control Workers		1,441			
Pharmacists					6,388
Pharmacy Technicians		4,322			
Photographers		1,441			
Physical Therapist Assistants				3,036	
Physical Therapists					6,388
Physician Assistants					4,473
Physicians and Surgeons					15,970
Plumbers, Pipefitters, and Steamfitters		4,322			
Police and Sheriff's Patrol Officers		5,763			
Police, Fire, and Ambulance Dispatchers		1,441			
Postal Service Mail Carriers		2,881			
Postsecondary Teachers					41,522
Preschool Teachers, Except Special				9,108	

Occupation Title	Less than High School	High School Diploma	Some College	Associate's Degree	Bachelor's Degree or Higher
Education					
Printing Press Operators		1,441			
Probation Officers and Correctional Treatment Specialists					1,986
Producers and Directors					1,986
Production Workers, All Other		2,881			
Production, Planning, and Expediting Clerks		2,881			
Property, Real Estate, and Community Association Managers		2,881			
Protective Service Workers, All Other		1,441			
Psychiatric Technicians			7,807		
Public Relations Specialists					3,971
Purchasing Agents, Except Wholesale, Retail, and Farm Products		2,881			
Radiologic Technologists and Technicians				6,072	
Real Estate Brokers		1,441			
Real Estate Sales Agents		4,322			
Receptionists and Information Clerks		11,526			
Recreation Workers					3,971
Refuse and Recyclable Material Collectors	1,202				
Registered Nurses				63,756	
Rehabilitation Counselors					4,473
Reservation and Transportation Ticket Agents and Travel Clerks		1,441			
Residential Advisors			7,634		
Respiratory Therapists				3,036	
Retail Salespersons	36,048				
Roofers	1,202				
Sales and Related Workers, All Other		1,441			
Sales Managers					3,971
Sales Representatives, Services, All Other		5,763			
Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products		14,407			
Sales Representatives, Wholesale and Manufacturing, Technical and					5,957

Occupation Title	Less than High School	High School Diploma	Some College	Associate's Degree	Bachelor's Degree or Higher
Scientific Products					
Secondary School Teachers, Except Special and Career/Technical Education					13,899
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive		18,729			
Securities, Commodities, and Financial Services Sales Agents					3,971
Security and Fire Alarm Systems Installers		1,441			
Security Guards		11,526			
Self-Enrichment Education Teachers		2,881			
Sewing Machine Operators	1,202				
Sheet Metal Workers		1,441			
Shipping, Receiving, and Traffic Clerks		5,763			
Slaughterers and Meat Packers	1,202				
Social and Community Service Managers					1,986
Social and Human Service Assistants		4,322			
Social Workers, All Other					1,986
Software Developers, Applications					7,942
Software Developers, Systems Software					5,957
Special Education Teachers, Middle School					1,986
Special Education Teachers, Preschool, Kindergarten, and Elementary School					3,971
Special Education Teachers, Secondary School					1,986
Speech-Language Pathologists					4,473
Stock Clerks and Order Fillers	13,218				
Structural Metal Fabricators and Fitters		1,441			
Substance Abuse and Behavioral Disorder Counselors		1,441			
Surgical Technologists			7,807		
Switchboard Operators, Including Answering Service		1,441			
Tax Preparers		1,441			
Taxi Drivers and Chauffeurs	2,403				

Occupation Title	Less than High School	High School Diploma	Some College	Associate's Degree	Bachelor's Degree or Higher
Teacher Assistants		12,966			
Teachers and Instructors, All Other					11,914
Team Assemblers		8,644			
Telecommunications Equipment Installers and Repairers, Except Line Installers			7,807		
Telecommunications Line Installers and Repairers		1,441			
Telemarketers	2,403				
Tellers		4,322			
Tire Repairers and Changers		1,441			
Training and Development Specialists					3,971
Transportation, Storage, and Distribution Managers		1,441			
Travel Agents		1,441			
Ushers, Lobby Attendants, and Ticket Takers	1,202				
Veterinarians					3,194
Veterinary Assistants and Laboratory Animal Caretakers		1,441			
Veterinary Technologists and Technicians				3,036	
Waiters and Waitresses	18,024				
Water and Wastewater Treatment Plant and System Operators		1,441			
Welders, Cutters, Solderers, and Brazers		2,881			
Wholesale and Retail Buyers, Except Farm Products		1,441			
Word Processors and Typists		1,441			
Writers and Authors					1,986
Totals	**302,801**	**576,281**	**381,692**	**160,909**	**449,048**
Percentage by Education	**16.2%**	**30.8%**	**20.4%**	**8.6%**	**24.0%**

Appendix C: Projected Shortage of the South Carolina Workforce in 2030 by Occupation and Education Requirement

Occupation Title	Less than High School	High School Diploma	Some College	Associate's Degree	Bachelor's Degree or Higher
Accountants and Auditors					4,319
Administrative Services Managers		312			
Adult Basic and Secondary Education and Literacy Teachers and Instructors					480
Advertising Sales Agents		156			
Aerospace Engineers					480
Aircraft Mechanics and Service Technicians					
Amusement and Recreation Attendants	348				
Appraisers and Assessors of Real Estate		156			
Architects, Except Landscape and Naval					480
Architectural and Civil Drafters				830	
Architectural and Engineering Managers					480
Assemblers and Fabricators, All Other		312			
Automotive and Watercraft Service Attendants	174				
Automotive Body and Related Repairers		156			
Automotive Service Technicians and Mechanics		779			
Bakers	174				
Bartenders	522				
Bill and Account Collectors		468			
Billing and Posting Clerks		624			
Biological Technicians					480
Bookkeeping, Accounting, and Auditing Clerks		2,027			
Brickmasons and Blockmasons		156			
Bus and Truck Mechanics and Diesel Engine Specialists		312			
Bus Drivers, School or Special Client		468			

Occupation Title	Less than High School	High School Diploma	Some College	Associate's Degree	Bachelor's Degree or Higher
Bus Drivers, Transit and Intercity		156			
Business Operations Specialists, All Other		1,091			
Butchers and Meat Cutters	174				
Cabinetmakers and Bench Carpenters		156			
Career/Technical Education Teachers, Secondary School					480
Cargo and Freight Agents		156			
Carpenters		1,091			
Cashiers	3,826				
Cement Masons and Concrete Finishers	174				
Chefs and Head Cooks		156			
Chemists					480
Chief Executives					960
Child, Family, and School Social Workers					960
Childcare Workers		1,403			
Civil Engineering Technicians				830	
Civil Engineers					960
Claims Adjusters, Examiners, and Investigators		312			
Cleaners of Vehicles and Equipment	348				
Clergy					960
Clinical, Counseling, and School Psychologists					
Coaches and Scouts		312			
Coating, Painting, and Spraying Machine Setters, Operators, and Tenders		156			
Combined Food Preparation and Serving Workers, Including Fast Food	3,304				
Community and Social Service Specialists, All Other					480
Compensation, Benefits, and Job Analysis Specialists					480
Compliance Officers					960
Computer and Information Systems Managers					960
Computer Occupations, All Other					480

Occupation Title	Less than High School	High School Diploma	Some College	Associate's Degree	Bachelor's Degree or Higher
Computer Programmers					960
Computer Support Specialists			3,725		
Computer Systems Analysts					1,919
Computer-Controlled Machine Tool Operators, Metal and Plastic		156			
Computer, Automated Teller, and Office Machine Repairers					
Construction and Building Inspectors		156			
Construction Laborers	1,217				
Construction Managers				3,322	
Cooks, Fast Food	522				
Cooks, Institution and Cafeteria	522				
Cooks, Restaurant	1,044				
Cooks, Short Order	174				
Correctional Officers and Jailers		468			
Cost Estimators					960
Counter and Rental Clerks	522				
Counter Attendants, Cafeteria, Food Concession, and Coffee Shop	522				
Couriers and Messengers		156			
Court, Municipal, and License Clerks		156			
Customer Service Representatives		2,338			
Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic		156			
Data Entry Keyers		156			
Database Administrators					480
Demonstrators and Product Promoters		156			
Dental Assistants					
Dental Hygienists				1,661	
Dentists, General					
Detectives and Criminal Investigators		156			
Dining Room and Cafeteria Attendants and Bartender Helpers	522				
Directors, Religious Activities and Education					480
Dishwashers	522				
Dispatchers, Except Police, Fire, and Ambulance		156			
Door-to-Door Sales Workers, News		156			

Occupation Title	Less than High School	High School Diploma	Some College	Associate's Degree	Bachelor's Degree or Higher
and Street Vendors, and Related Workers					
Driver/Sales Workers		468			
Drywall and Ceiling Tile Installers	174				
Editors					480
Education Administrators, Elementary and Secondary School					
Education Administrators, Postsecondary					
Education, Training, and Library Workers, All Other					480
Educational, Guidance, School, and Vocational Counselors					
Electrical and Electronic Equipment Assemblers		156			
Electrical and Electronics Engineering Technicians				830	
Electrical Engineers					480
Electrical Power-Line Installers and Repairers		156			
Electricians		624			
Electronics Engineers, Except Computer					480
Elementary School Teachers, Except Special Education					5,279
Eligibility Interviewers, Government Programs				830	
Emergency Medical Technicians and Paramedics					
Engineers, All Other					480
Environmental Scientists and Specialists, Including Health					480
Executive Secretaries and Executive Administrative Assistants		1,403			
Extruding and Drawing Machine Setters, Operators, and Tenders, Metal and Plastic		156			
Farmers, Ranchers, and Other Agricultural Managers		1,091			
File Clerks		156			
Financial Analysts					960
Financial Managers					1,919
Financial Specialists, All Other					480

Occupation Title	Less than High School	High School Diploma	Some College	Associate's Degree	Bachelor's Degree or Higher
Firefighters					
First-Line Supervisors of Construction Trades and Extraction Workers		624			
First-Line Supervisors of Food Preparation and Serving Workers		779			
First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand		156			
First-Line Supervisors of Housekeeping and Janitorial Workers		156			
First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers		156			
First-Line Supervisors of Mechanics, Installers, and Repairers		468			
First-Line Supervisors of Non-Retail Sales Workers		468			
First-Line Supervisors of Office and Administrative Support Workers		1,559			
First-Line Supervisors of Personal Service Workers		312			
First-Line Supervisors of Police and Detectives		156			
First-Line Supervisors of Production and Operating Workers					
First-Line Supervisors of Retail Sales Workers		1,715			
First-Line Supervisors of Transportation and Material-Moving Machine and Vehicle Operators		156			
Fitness Trainers and Aerobics Instructors		312			
Flight Attendants		156			
Food Batchmakers		156			
Food Preparation Workers	870				
Food Servers, Nonrestaurant	348				
Food Service Managers		312			
Gaming Dealers		156			
General and Operations Managers				9,134	
Graphic Designers					960
Hairdressers, Hairstylists, and					

Occupation Title	Less than High School	High School Diploma	Some College	Associate's Degree	Bachelor's Degree or Higher
Cosmetologists					
Health Educators					480
Health Technologists and Technicians, All Other					
Healthcare Social Workers					
Healthcare Support Workers, All Other		156			
Heating, Air Conditioning, and Refrigeration Mechanics and Installers					
Heavy and Tractor-Trailer Truck Drivers		1,871			
Helpers--Electricians		156			
Helpers--Installation, Maintenance, and Repair Workers		156			
Helpers--Pipelayers, Plumbers, Pipefitters, and Steamfitters		156			
Helpers--Production Workers	522				
Highway Maintenance Workers		156			
Home Health Aides	1,913				
Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop	348				
Hotel, Motel, and Resort Desk Clerks		312			
Human Resources Assistants, Except Payroll and Timekeeping		156			
Human Resources, Training, and Labor Relations Specialists, All Other					1,440
Industrial Engineers					480
Industrial Machinery Mechanics		312			
Industrial Production Managers					480
Industrial Truck and Tractor Operators	696				
Information and Record Clerks, All Other		156			
Information Security Analysts, Web Developers, and Computer Network Architects					960
Inspectors, Testers, Sorters, Samplers, and Weighers		468			
Installation, Maintenance, and Repair Workers, All Other		156			
Instructional Coordinators					
Insurance Claims and Policy		312			

Occupation Title	Less than High School	High School Diploma	Some College	Associate's Degree	Bachelor's Degree or Higher
Processing Clerks					
Insurance Sales Agents		468			
Insurance Underwriters					480
Interpreters and Translators					480
Interviewers, Except Eligibility and Loan		312			
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	2,783				
Kindergarten Teachers, Except Special Education					480
Laborers and Freight, Stock, and Material Movers, Hand	2,609				
Landscaping and Groundskeeping Workers	1,565				
Laundry and Dry-Cleaning Workers	174				
Lawyers					
Legal Secretaries		156			
Librarians					
Library Assistants, Clerical		156			
Library Technicians					
Licensed Practical and Licensed Vocational Nurses					
Lifeguards, Ski Patrol, and Other Recreational Protective Service Workers		156			
Light Truck or Delivery Services Drivers		935			
Loan Interviewers and Clerks		156			
Loan Officers		312			
Logisticians					480
Machine Feeders and Offbearers	174				
Machinists		312			
Maids and Housekeeping Cleaners	1,565				
Mail Clerks and Mail Machine Operators, Except Postal Service		156			
Maintenance and Repair Workers, General		1,403			
Management Analysts					2,399
Managers, All Other		779			
Manicurists and Pedicurists					
Market Research Analysts and Marketing Specialists					960

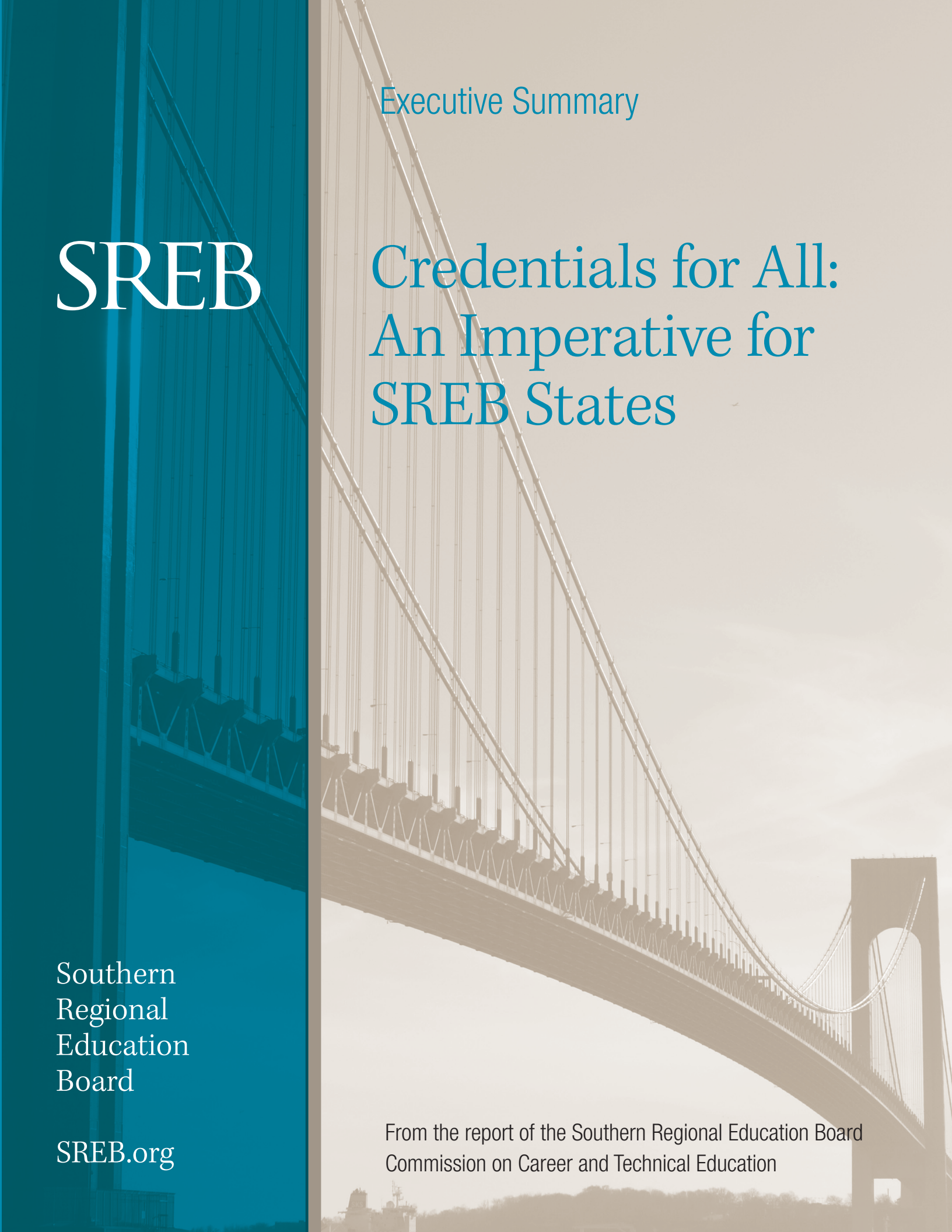
Occupation Title	Less than High School	High School Diploma	Some College	Associate's Degree	Bachelor's Degree or Higher
Marketing Managers					480
Massage Therapists					
Meat, Poultry, and Fish Cutters and Trimmers	174				
Mechanical Engineers					960
Medical and Clinical Laboratory Technicians				830	
Medical and Clinical Laboratory Technologists					480
Medical and Health Services Managers					960
Medical Assistants		624			
Medical Records and Health Information Technicians					
Medical Scientists, Except Epidemiologists					
Medical Secretaries		624			
Medical Transcriptionists					
Meeting, Convention, and Event Planners					480
Mental Health and Substance Abuse Social Workers					480
Mental Health Counselors					
Merchandise Displayers and Window Trimmers		156			
Middle School Teachers, Except Special and Career/Technical Education					2,399
Miscellaneous Agricultural Workers	696				
Mixing and Blending Machine Setters, Operators, and Tenders		156			
Mobile Heavy Equipment Mechanics, Except Engines		156			
Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders, Metal and Plastic		156			
Music Directors and Composers					480
Musicians and Singers		156			
Network and Computer Systems Administrators					1,440
Nonfarm Animal Caretakers	174				
Nursing Aides, Orderlies, and Attendants					

Occupation Title	Less than High School	High School Diploma	Some College	Associate's Degree	Bachelor's Degree or Higher
Occupational Therapists					
Office and Administrative Support Workers, All Other		312			
Office Clerks, General		3,274			
Operating Engineers and Other Construction Equipment Operators		468			
Order Clerks		156			
Packaging and Filling Machine Operators and Tenders		312			
Packers and Packagers, Hand	696				
Painters, Construction and Maintenance	522				
Paper Goods Machine Setters, Operators, and Tenders		156			
Paralegals and Legal Assistants				1,661	
Parking Lot Attendants	174				
Parts Salespersons	174				
Payroll and Timekeeping Clerks		156			
Personal Care Aides	1,565				
Personal Care and Service Workers, All Other		156			
Personal Financial Advisors					960
Pest Control Workers		156			
Pharmacists					
Pharmacy Technicians		468			
Photographers		156			
Physical Therapist Assistants				830	
Physical Therapists					
Physician Assistants					
Physicians and Surgeons					
Plumbers, Pipefitters, and Steamfitters		468			
Police and Sheriff's Patrol Officers		624			
Police, Fire, and Ambulance Dispatchers		156			
Postal Service Mail Carriers		312			
Postsecondary Teachers					
Preschool Teachers, Except Special Education				2,491	
Printing Press Operators		156			
Probation Officers and Correctional Treatment Specialists					480

Occupation Title	Less than High School	High School Diploma	Some College	Associate's Degree	Bachelor's Degree or Higher
Producers and Directors					480
Production Workers, All Other		312			
Production, Planning, and Expediting Clerks		312			
Property, Real Estate, and Community Association Managers		312			
Protective Service Workers, All Other		156			
Psychiatric Technicians					
Public Relations Specialists					960
Purchasing Agents, Except Wholesale, Retail, and Farm Products		312			
Radiologic Technologists and Technicians				1,661	
Real Estate Brokers		156			
Real Estate Sales Agents		468			
Receptionists and Information Clerks		1,247			
Recreation Workers					960
Refuse and Recyclable Material Collectors	174				
Registered Nurses				17,438	
Rehabilitation Counselors					
Reservation and Transportation Ticket Agents and Travel Clerks		156			
Residential Advisors			931		
Respiratory Therapists				830	
Retail Salespersons	5,218				
Roofers	174				
Sales and Related Workers, All Other		156			
Sales Managers					960
Sales Representatives, Services, All Other		624			
Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products		1,559			
Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products					1,440
Secondary School Teachers, Except Special and Career/Technical Education					3,359

Occupation Title	Less than High School	High School Diploma	Some College	Associate's Degree	Bachelor's Degree or Higher
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive		2,027			
Securities, Commodities, and Financial Services Sales Agents					960
Security and Fire Alarm Systems Installers		156			
Security Guards		1,247			
Self-Enrichment Education Teachers		312			
Sewing Machine Operators	174				
Sheet Metal Workers		156			
Shipping, Receiving, and Traffic Clerks		624			
Slaughterers and Meat Packers	174				
Social and Community Service Managers					480
Social and Human Service Assistants		468			
Social Workers, All Other					480
Software Developers, Applications					1,919
Software Developers, Systems Software					1,440
Special Education Teachers, Middle School					480
Special Education Teachers, Preschool, Kindergarten, and Elementary School					960
Special Education Teachers, Secondary School					480
Speech-Language Pathologists					
Stock Clerks and Order Fillers	1,913				
Structural Metal Fabricators and Fitters		156			
Substance Abuse and Behavioral Disorder Counselors		156			
Surgical Technologists					
Switchboard Operators, Including Answering Service		156			
Tax Preparers		156			
Taxi Drivers and Chauffeurs	348				
Teacher Assistants		1,403			
Teachers and Instructors, All Other					2,879
Team Assemblers		935			

Occupation Title	Less than High School	High School Diploma	Some College	Associate's Degree	Bachelor's Degree or Higher
Telecommunications Equipment Installers and Repairers, Except Line Installers					
Telecommunications Line Installers and Repairers		156			
Telemarketers	348				
Tellers		468			
Tire Repairers and Changers		156			
Training and Development Specialists					960
Transportation, Storage, and Distribution Managers		156			
Travel Agents		156			
Ushers, Lobby Attendants, and Ticket Takers	174				
Veterinarians					
Veterinary Assistants and Laboratory Animal Caretakers		156			
Veterinary Technologists and Technicians				830	
Waiters and Waitresses	2,609				
Water and Wastewater Treatment Plant and System Operators		156			
Welders, Cutters, Solderers, and Brazers		312			
Wholesale and Retail Buyers, Except Farm Products		156			
Word Processors and Typists		156			
Writers and Authors					480
Totals	**43,828**	**62,354**	**4,656**	**44,010**	**70,540**
Percentage by Education	**19.4%**	**27.7%**	**2.1%**	**19.5%**	**31.3%**



Executive Summary

SREB

Credentials for All: An Imperative for SREB States

Southern Regional Education Board

SREB.org

From the report of the Southern Regional Education Board Commission on Career and Technical Education

Credentials for All: An Imperative for SREB States

The challenge: *How do we help more young people earn the postsecondary credentials and degrees that matter in today's economy?*

SREB states and the nation are gaining ground on high school graduation rates. Eighty percent of American students now graduate on time from high school — continuing a decade of steady progress.[1]

However, the future looks bleak for young people with a high school diploma or less and no postsecondary credential of value in the workplace. The number of jobs available to those with a high school diploma or less has steadily declined for decades, and the Great Recession hit these individuals hard,[4] particularly in SREB states.[5] Workers with a high school diploma or less continue to lose jobs despite the economic recovery.[6]

Employment in the New Economy

In the 21st-century U.S. economy, nearly two-thirds of all jobs require education and training beyond high school. One growing sector is jobs that pay between $35,000 and $75,000 a year[2] in fields such as advanced manufacturing, energy, health care, information technology, and science, technology, engineering and mathematics (STEM).[3] To secure these jobs, individuals need to know how to analyze data, apply math, use technology, think critically and solve problems — skills students can develop in high schools, work-based training programs, community and technical colleges, and universities.

For young people born into poverty, educational attainment may offer the only means of moving up the economic ladder. Research shows that 42 percent of young people born to families in the lowest fifth of income distribution will remain there[7] — a considerably higher percentage than countries like Great Britain (about 30 percent) or northern European countries like Denmark, Finland and Sweden (about 15 percent).[8] Even youth born to middle-income families are as likely to move down the economic ladder as they are to move up.[9]

The future looks brighter for young people with the right postsecondary credentials. Higher education attainment of any kind benefits individuals in the labor market. Post-recession, jobs for those with bachelor's degrees have increased, and jobs for workers with some college or a postsecondary credential have mostly recovered.[10]

But not enough students are earning postsecondary credentials and degrees. As Table 1 shows, between 55 percent and 73 percent of adults aged 25 to 64 in SREB states had less than a postsecondary credential in 2012. And although about two-thirds of high school graduates immediately enroll in some form of postsecondary education, too few complete a useful credential.[11] As of 2012, the three-year graduation rate for first-time, full-time certificate or associate degree-seeking students fell shy of 20 percent; the six-year graduation rate for first-time, full-time bachelor's-seeking students was about 57 percent.[12] SREB's analyses of educational attainment data suggest that at least half of all students entering ninth grade will fail to earn a credible industry or postsecondary credential or degree by age 25.

TABLE 1:
Percentage of Adults Aged 25-64 by Educational Attainment, SREB States — 2012

State	No high school credential	High school but no post-sec. credential	Some postsec. but no credential	Total: Less than a postsec. credential	Postsec. credential
Alabama	15	30	23	68	32
Arkansas	14	34	23	71	29
Delaware	10	31	21	62	38
Florida	12	29	22	63	37
Georgia	13	28	22	63	37
Kentucky	13	34	22	69	31
Louisiana	15	34	22	71	29
Maryland	9	25	21	55	45
Mississippi	16	30	24	70	30
North Carolina	13	26	23	62	38
Oklahoma	12	31	24	67	33
South Carolina	13	30	22	65	35
Tennessee	13	33	22	68	32
Texas	18	25	23	66	34
Virginia	10	24	21	55	45
West Virginia	13	40	20	73	27

Source: U.S. Census Bureau.

Executive Summary

Low educational attainment harms individuals and the economy. At current rates of attainment, by 2020 the United States will fall 5 million workers short of industry demand for employees with some postsecondary education.[13] Despite this substantial workforce gap, joblessness is persistently high, especially for minorities. According to U.S. Department of Labor data for adults aged 20 to 24 who were looking for work in 2013, unemployment was more than 11 percent for white young adults, almost 13 percent for Hispanic young adults and nearly 23 percent for black young adults.[14] The economic outlook for young men is also poor. The age at which young men can expect to reach the median wage has shifted dramatically. In 1980, it was age 26; in 2010, it was age 30.[15]

> *"The new forgotten half [are] those youth who do not complete college and find themselves shut out of good jobs in the era of college for all… Many youth who took society's advice to attend college, sacrificing time and often incurring debts, have nothing to show for their efforts in terms of credentials, employment, or earnings."*
>
> — William T. Grant Foundation[16]

Not enough students are earning credentials and degrees in the right fields for today's economy. Many believe that a bachelor's degree, regardless of major, is the best guarantee of a well-paying job. Yet after taking on debt, some recent college graduates find themselves with no work. As of 2012, the average unemployment rate for recent college graduates ages 22 to 26 with a bachelor's degree was 7.5 percent.[17] And according to one estimate, as many as 23 percent of recent college graduates may be underemployed, working in a job that requires less than a college degree.[18]

Overall, SREB's analyses of educational and labor market data suggest that for many young adults, the 20s are a lost decade. After years of underemployment or unemployment, many return to school when they are nearly 30.[19]

Simply put, the bridge from high school to postsecondary attainment and career opportunities is broken. To solve this problem, more high school students must get into community and technical colleges — and on pathways to postsecondary attainment and career advancement — much sooner.

The challenge: *How do we provide more young people with an education that connects the classroom with the workplace and prepares them to succeed in postsecondary education and 21st-century careers?*

The solution:

- **Transform education with rigorous, relevant career pathways that align secondary, postsecondary and workplace learning and lead to postsecondary credentials that help individuals secure good jobs.**
- **Double the percentage of young adults who earn postsecondary credentials by age 25 over the next decade.** These credentials include advanced industry credentials and postsecondary certificates and degrees at the associate degree level or higher.

Members of SREB's Commission on Career and Technical Education offer eight actions states can take to build rigorous, relevant career pathways.

These eight actions — supported by a set of policies and practices summarized below and described at length in the full report — can help states double the percentage of young adults earning valuable industry and postsecondary credentials.

Steve Beshear, Governor, Commonwealth of Kentucky
Chair, Southern Regional Education Board
Chair, SREB Commission on Career and Technical Education

A Message from Governor Beshear

In the SREB region, each of our states has its own character, our economies as different as our landscapes and our dialects. But we share a common problem: Too few students graduate from high school with the academic, technical and workplace knowledge and skills they need to find employment in the key industries that are critical to our states' economies. One of my goals as chair of SREB and its Commission on Career and Technical Education is to promote policies and practices to support strong career pathways that help more students earn industry and postsecondary credentials and obtain good jobs.

This report makes it clear that preparing for today's workplace requires a transformation of our educational system. Over the next decade, we must double the number of young adults who earn credible advanced credentials or degrees by age 25.

By creating high-quality career pathways in our states, we can ensure that our region's young adults are fully prepared for today's knowledge-based economy.

ACTION 1 — Build bridges from high school to postsecondary education and the workplace by creating rigorous, relevant career pathways driven by labor market demand. Such pathways:

A. Combine a college-ready academic core with challenging technical studies and require students to complete real-world assignments.

Require all students to complete a college-ready academic core and a concentration — for example, a four-course career pathway or a set of Advanced Placement or International Baccalaureate courses — that provide the foundational learning skills they need to earn credentials and secure good jobs.

B. Align three stages of learning — secondary, postsecondary and the workplace — through strategies like dual enrollment and work-based learning.

Leverage state and federal funds to incentivize school districts, community and technical colleges, and employers to develop career pathways that align with identified workforce needs in key state and regional industry sectors.

Promote structured dual enrollment programs for career pathways and establish uniform statewide policies so students can earn credits toward high school graduation that are automatically added to students' transcripts at community and technical colleges.

Incentivize industry partners to expand ongoing, structured, progressively intensive work-based learning that engages students in authentic applications of academic, technical and workplace skills.

Royce West, Texas State Senator

Develop policies with insurers, workforce commissions and other agencies to protect students and their employers in work-based learning experiences.

C. Create guidance systems that include career information, exploration and advisement and engage students in ongoing career and college counseling beginning in the middle grades.

Mandate career exploration courses and activities in the middle grades and high school and adopt distributed, curriculum-based career guidance systems that make career and college counseling the shared responsibility of every adult in the school.

D. Allow students to choose accelerated learning options in settings that provide the extended time needed to earn advanced industry credentials.

Encourage school districts to offer career pathways in diverse settings — comprehensive high schools, shared-time technology centers, full-time technical high schools, early college high schools, career academies, and community and technical colleges — that allow students to earn advanced credentials and college credits while still participating in activities at their home high schools.

Incentivize districts, technology centers, and community and technical colleges to partner to create early advanced credential programs modeled after early college high schools. Early advanced credential programs allow students to graduate with a diploma plus an advanced industry certification, postsecondary credential or significant credits toward an associate degree.

E. Lead to further education and training and high-skill, high-wage jobs in high-demand industries.

Prioritize the investment of state and federal funds to develop rigorous, relevant career pathways that lead to employment in state and regional industry sectors with a shortage of skilled workers.

ACTION 2 — Expect all students to graduate academically ready for both college and careers.

Establish literacy- and math-readiness standards for non-STEM college majors and set benchmark cut scores on the assessments chosen to measure college readiness.

Collaborate with secondary, postsecondary and industry partners to establish foundational literacy and math readiness standards needed for advanced education and training, non-degree programs and the workplace. Establish cut scores for academic career readiness on multiple validated assessments (such as nationally normed assessments) that predict success in advanced training programs.

Use state-approved junior-year academic readiness assessments as a measure of students' academic preparedness for college and advanced training programs. Work with community and technical colleges to adopt or develop senior-year transitional readiness courses in literacy and math that count as fourth English or math credits.

ACTION 3 — Select assessments of technical and workplace readiness standards that offer long-term value to individual students, employers and the economy; carry college credits; and are directly linked to more advanced certifications and further study.

Define technical career readiness in state policy, capturing the knowledge and skills students must master to enter postsecondary education and training programs and secure high-skill, high-wage jobs in high-demand fields.

Designate a state agency to work with secondary and postsecondary education agencies and employers to identify, evaluate and approve industry certification examinations, technical skills assessments, dual credit courses and end-of-course assessments that are part of a system of stackable credentials.

ACTION 4 — Provide all high school career pathway teachers, especially new teachers from industry, with the professional development and fast-track induction programs they need to meet high academic, technical and pedagogical standards and enhance students' academic and technical readiness for college and careers.

Allocate funds for new teachers from industry to participate in fast-track induction programs that span the first 15 months of teaching and include two weeks to one month of paid employment in the summer before they enter the classroom.

Work with postsecondary and industry partners and external providers to deliver research-based professional development that teaches academic and CTE teachers how to design real-world, project-based instruction, assignments and assessments that integrate literacy, math and science with technical content.

ACTION 5 — Adopt a framework of strategies to restructure low-performing high schools around rigorous, relevant career pathways that accelerate learning and prepare students for postsecondary credentials and degrees.

Use federal, state and local funds to help low-performing high schools reorganize around theme-based career academies that feature rigorous, relevant career pathways.

ACTION 6 — Offer early advanced credential programs in shared-time technology centers, aligning their curricula, instruction and technology with home high schools and community and technical colleges.

Create the time needed for technology center students to earn advanced industry credentials by offering full-time study during students' junior and senior years; extending the school year or the school day; creating 13th-year early advanced credential programs; converting some centers into full-time technical high schools or full-time regional magnets; or partnering with community and technical colleges to offer junior- and senior-year career pathway instruction.

ACTION 7 — Incentivize community and technical colleges and school districts to double the percentage of students who earn certificates, credentials and degrees by setting statewide readiness standards and aligning assessment and placement measures with those standards. Other strategies: Use the senior year of high school to reduce the number of students who need remediation, retool developmental education, adopt individualized support strategies for struggling students and improve affordability.

Use a combination of incentives and performance-based funding models to encourage community and technical colleges to work with school districts to increase the percentage of students who complete their programs and earn industry credentials and postsecondary certificates and degrees.

Increase the number of ways students can qualify for credit-bearing course work and developmental education. Establish multiple measures of postsecondary readiness, such as the grade point average (GPA), benchmark scores on nationally normed assessments and college placement exams.

ACTION 8 — Design accountability systems that recognize and reward districts, high schools, technology centers, and community and technical colleges that double the number of young adults who acquire postsecondary credentials and secure high-skill, high-wage jobs by age 25.

Allocate extra weight in state accountability systems for each high school student who meets both academic college-readiness standards and technical career-readiness standards. Ensure that the state accountability system values academic college readiness and academic and technical career readiness equally.

Allocate extra weight in state accountability systems for each high school student who completes an advanced industry credential in a critical industry sector.

Increase each year the percentage of high school students who demonstrate academic, technical and workplace readiness by:

a. completing capstone courses, senior portfolios, career and technical student organization competitions, or work-based learning experiences;

b. attaining advanced industry credentials;

c. earning dual credits for career pathway courses; and

d. passing end-of-course assessments for career pathway courses that generate extra weight toward the GPA or carry college credit.

Derrick Graham, State Representative, Kentucky

Establish a multi-measure, college- and career-ready performance index to assess, track and report progress made by school districts, high schools, community and technical colleges, and employers delivering career pathways. Expect secondary and postsecondary partners to:

- Raise high school graduation rates to 90 percent or higher in all high schools within a decade or less and help schools with graduation rates of 70 percent or less raise their graduation rates to 80 percent or higher within five years.
- Increase the percentage of students who leave high school academically prepared for college and careers to 80 percent or higher.
- Increase each year the percentage of students who meet academic career-readiness benchmarks for the foundational literacy and math skills appropriate to their career pathways.
- Increase each year the percentage of high school students who complete a career pathway consisting of a college-ready academic core and at least four sequential CTE courses leading to further education and training and workforce opportunities.
- Increase each year the percentage of high school graduates who immediately enter some form of postsecondary education, including employer-sponsored work-based training programs.
- Double over the next decade the percentage of young people who complete advanced industry credentials, postsecondary certificates and degrees by age 25.
- Expand each year the number of secondary and postsecondary students who participate in employer-sponsored work-based experiences and learn-and-earn programs.

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SREB Commission on Career and Technical Education

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April 2015 (15V09)

Executive Summary

SREB

Community Colleges in the South

Strengthening Readiness and Pathways

Southern Regional Education Board

SREB.org

February 2015

From the report of the Southern Regional Education Board Commission on Community Colleges

Community Colleges in the South

Much has been asked of community colleges — and even more will be required from them in the future.

The Southern Regional Education Board (SREB) established the Commission on Community Colleges to foster a robust discussion on the critical role of these institutions — and their evolving potential over the next decade to support the well-being and growth of their states.

The community college campus is a reflection of its community — a complex blend of students of all ages and backgrounds, some seeking short-term certificates and others looking for a degree.

Community colleges are essential to achieving state goals — increasing the educational attainment of the population, increasing access and completion, eliminating achievement gaps, closing opportunity gaps, and addressing workforce and economic development objectives. These institutions are flexible, adaptable, affordable, community-based, user-friendly and nearby for the people who need them.

But community colleges must do better if they are to overcome the challenges they face. Community colleges need to be the first choice — not the last choice — of more high school graduates and older students returning to college. They need to become student- and community-centric. They need to read the marketplace and respond quickly and efficiently. And they need to do a much better job of helping students complete certificates and degrees and meet their goals to transfer to other institutions.

The community college campus is a reflection of its community — a complex blend of students of all ages and backgrounds, some seeking short-term programs and others looking for a certificate, degree or further education. These institutions that serve so many needs now face widespread challenges — in financing, support services and leadership — that may shape an era of reform and realignment.

Strengthening Readiness and Pathways

To meet these challenges, SREB's Community College Commission focused on two key issues: readiness for success in postsecondary education and structuring pathways for success. The Commission offers these goals and recommendations with the expectation that SREB states will use this opportunity to strengthen the role of community colleges in the South and broaden understanding of how these institutions serve students, families and communities.

Meeting the Postsecondary **Readiness** Challenge

While preparing students for postsecondary endeavors is the responsibility of the nation's high schools, it is important for higher education to take its fair share of responsibility. Relationships between community colleges and local high schools allow colleges to be partners with K-12. Once students reach campus, community colleges must ensure that developmental education prepares at-risk students to succeed in credit-bearing courses — and is no longer a major stopping point for students.

Fix the Placement Process. Postsecondary education needs to rebuild the process through which students' readiness to succeed is determined. Placement processes must connect to more effective ways to help at-risk students succeed.

Reconsider the Readiness Skills Needed for Postsecondary Success. The literacy and math standards students need to be ready to succeed in postsecondary work should be reconsidered during this examination of the placement process.

Optimizing Structurally Guided **Pathways**

One of the most underutilized strategies to support students in completing credentials is emphasizing well-defined, rather narrow pathways where faculty have sequenced the courses and identified well-defined learning outcomes that students follow to complete associate or bachelor's degrees in a timely manner. **Structure and guidance are important, and costly.**

Elements of structurally guided pathways:

- Adequate and appropriate advising on careers and programs, rather than only on courses, to support students to stay on track with a graduation plan and declare a major early.
- Ways for students to build credit toward a certificate or skill base, so they gain some benefit even if they leave college before completing a credential.
- Opportunity to take accelerated courses such as dual enrollment and Advanced Placement in high school.
- Strong statewide transfer systems and agreements that protect students' credits when they move among institutions.
- Policies and practices that discourage, or perhaps prevent, students from accruing more credit hours than they need for their degrees.

Affordability and Accountability

Goal: Keep college affordable by increasing state funding, tying those investments to specific attainment goals for public community colleges, and holding institutions accountable for increasing student access, persistence and completion.

States should:

1. **Commit to increased funding for community colleges**, taking into account better alignment of tuition, financial aid and appropriations.
   - Strongly consider using outcomes-based funding for public community colleges, with metrics that reflect the key missions and roles of these institutions in fulfilling state education goals of serving underprepared students and those from historically underserved populations.
   - Systematically review certificates offered by public community colleges and identify those that are "certificates of value" and eligible for outcomes-based funding and student financial aid awards.
   - Structure state financial aid programs to reward and encourage students who make reasonable progress toward a certificate or degree, including aid programs focused specifically on helping part-time students advance.
   - Design financing policy that supports innovative programs aligned with student needs and effectiveness in the labor market.
   - Ensure that financing policy provides for collecting and analyzing information that informs decision-making and identifies programs for expansion or termination.
   - Establish clear expectations for student support services on two-year campuses and provide sufficient fiscal resources to staff critical services and targeted programs.
2. **Specify targets that community colleges should meet** to increase the numbers of certificates and degrees in the state.
3. Ensure that state higher education agencies and boards of trustees **hold college presidents and other senior administrators accountable for student success**.

Institutions should:

4. Ensure that the selection, performance evaluation and accountability of all campus administrators **emphasize actions that reinforce the commitment to students' completion** of certificates and degrees.
5. **Conduct frequent and regular in-depth reviews** of associate degree and certificate programs to verify clear and close alignment with documented labor market needs.

Readiness

Goal: Reconsider the literacy and math readiness skills needed to succeed in college and postsecondary career education and re-evaluate related placement procedures.

States should develop statewide policy that guides institutions to:

6. Place greater **emphasis on the skills students need to read complex texts** across a range of disciplines and explain in writing the meaning of these texts.
7. **Clearly distinguish the math readiness skills** needed by students who will enter non-STEM fields from those needed by students who begin in math-based majors.
8. **Evaluate lower-division gateway courses** in English and math to specify courses needed as general education degree requirements or as substantive prerequisites for subsequent work.
   - Specifically identify the math, reading and writing skills needed to succeed in courses and programs that are not English composition or literature-based and that are not math-based.
   - Evaluate which gateway courses are needed and which literacy and math skills are required in non-gateway courses. Use the results to identify the literacy and math readiness skills that students need upon entry for first-year gateway courses and for other general education and major-related courses.
9. **Reform the placement process**, incorporate multiple measures for entering students and align placement requirements with the literacy and math readiness skills identified in No. 8 above.
   - Ensure that readiness assessments address with highest validity the specific kind and level of skills needed.
   - Involve four-year institutions in the re-examination of the placement process so that transfer is based on a shared view with two-year institutions of course and skill requirements.
10. **Guide students who need further development** of target skills to one of the following paths, monitor all at-risk students and evaluate learning supports for effectiveness and cost.
    - Begin degree-credit course work without learning support while the college monitors performance.
    - Undertake some form of learning support in parallel with degree-credit course work or embedded in the degree-credit courses. Performance should be monitored carefully.
    - For students with significant academic deficiencies, limit developmental support to one term in a course tightly aligned with gateway math or English courses.

Pathways

Goal: Provide structurally guided pathways that clearly align with documented labor market needs and smoothly transition high school students, as well as returning adults, into community colleges and on to four-year institutions and work.

States should:

11. Require community colleges to develop **structurally guided pathways** for programs of study that align with student and industry needs and lead to a certificate or a degree.

- Require community colleges to conduct frequent and regular program reviews to determine labor market alignment and the potential for program expansion or termination.
- Ensure that structurally guided pathways emphasize early choice of major program, a graduation plan, mentoring and interventions to keep students on their graduation plan. Full-time enrollment should be encouraged. However, because many students cannot afford to attend full time, state policy should also require pathways with requirements sequenced over a longer period, tailored for part-time students.
- Ensure that each program is transparent. Students graduating from high school and adults returning to college should see clear and meaningful entry, exit and re-entry points.

12. Ensure that state financing policy and practice provide **sufficient funding and flexibility to support community colleges that are nimble** and responsive to local and regional workforce needs.

- Support community college efforts to expand acceleration mechanisms, such as dual enrollment and early college programs, to create entry points directly into college work.
- Support collection and analysis of data to inform decision-making for effective structurally guided pathways.
- Use financial aid policy to favor students who progress appropriately in or successfully complete structurally guided pathways.

13. Ensure that students have a **guaranteed, statewide college transfer system** based on standard, lower-division curriculum requirements recognized by all public community colleges and universities.

- Develop a common, statewide lower-division (freshman and sophomore) core curriculum of 60 credit hours for an associate transfer degree for all two-year colleges and universities in more popular major fields. The 60-hour core should include all general education, pre-major prerequisites and electives.
- Ensure that community college students who take the core 60 credit-hour lower division course work will be able to complete a baccalaureate degree at any public university by successfully completing only the number of hours remaining for a specific bachelor's program.
- Require articulation officers at each institution and at state agencies to facilitate, monitor and support student transfer.

Institutions should:

14. **Collaborate with local workforce and economic development agencies** and organizations to identify local and regional job markets and the credentials needed for employment in them.
    - Conduct in-depth, comprehensive reviews of each Associate of Applied Science degree program to determine appropriate alignment with certificate and baccalaureate programs and relationship to workforce needs.
    - Embed the credentials identified in these reviews within associate degrees and offer these programs within structurally guided pathways that include systematic on- and off-ramps so students can move from certificates to degrees easily and cost effectively.
15. Ensure that all structurally guided pathway programs contain **four key elements**: early choice of major, a student graduation plan, mentoring and interventions to keep students on their plans.
16. **Encourage students to complete the associate degree** before leaving the community college and consider providing a sub-associate general education credential recognized for university transfer.

Credientials Other Than Degrees

Goal: Statewide recognition of pathways within pathways that enable students to move from certificates to degrees easily and cost effectively.

States should:

17. **Identify options for stackable certificates and badges**, especially industry-endorsed certificates that can be stacked in manufacturing and other areas.
18. Review financial aid programs to explore how to **support part-time students** with need-based financial aid.
19. Design GEDs linked to specific workforce needs, examine the cost of **contextualizing the GED** and develop recommendations on how to share the cost with students, districts and the state.

Institutions should:

20. **Collaborate with local workforce and economic development** agencies and organizations to identify local and regional job markets, the credentials they require and the pathways to those credentials.
21. Intentionally **link each GED pathway to a postsecondary credential** and degree program.

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The Economist Intelligence Unit

Driving the skills agenda:
Preparing students for the future

An Economist Intelligence Unit report, sponsored by Google

Sponsored by Google for Education

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Executive summary

Evolving business needs, technological advances and new work structures, among other factors, are redefining what are considered to be valuable skills for the future. Determining what these are, however, is far from straightforward.

The very pace and unpredictability of change means that, as Paul Cappon, former president of the Canadian Council on Learning, puts it, "we are not going to be able to predict the skills that people will need in 20 years". Yong Zhao, director of the University of Oregon's Institute for Global and Online Education, agrees, adding that skills are also highly context-dependent and multifaceted. Levels of creativity, for example, depend heavily on the area in which an individual is seeking to be creative and may require the acquisition of a substantial level of knowledge in that field, as much as an ability to approach problems in a certain way.

Another substantial issue when considering which skills will be valuable in the future is deciding who will be assigning that value. As Mr Zhao points out, the parents of a student in a developing country might value skills that their child can exploit in the global digital economy; the government of that country might instead prefer skills that help the national economy industrialise; and the child might well prioritise skills that facilitate artistic expression. Nor are these wishes necessarily immutable. Svava Bjarnason, senior education specialist at the World Bank's International Finance Corporation, notes: "It is very difficult to suppose what any one country might have aspirations for, even over the next decade. If you look at aspirations in the Middle East compared with three years ago, how would you judge the right skill mix [for the future]?"

Bearing such constraints in mind, The Economist Intelligence Unit (EIU) embarked on a research programme, sponsored by Google, to examine to what extent the skills taught in education systems around the world are changing. For example, are so-called 21st-century skills, such as leadership, digital literacy, problem solving and communication, complementing traditional skills such as reading, writing and arithmetic? And do they meet the needs of employers and society more widely?

To investigate these issues, The EIU convened an advisory board meeting of education experts and conducted a series of in-depth interviews. In addition to comments from the advisory board and the interviews, this report draws on data from global surveys of senior business executives, teachers and two groups of students, aged 11 to 17 and 18 to 25. The key findings are listed below.

● **Problem solving, team working and communication are the skills that are currently most in demand in the workplace.**

Sean Rush, president and chief executive officer of JA (Junior Achievement) Worldwide, an organisation that helps teach entrepreneurship in schools and links students with local business people, notes: "Communication and collaboration are essential in a list of 21st-century skills; so much of work in the future will require things to be done across boundaries." As our data show, that future is already here. The executives surveyed list problem solving (cited by 50%), team working (35%) and communication (32%) as the top three skills that their companies need, and they expect these skills to grow in importance over the next three years. Problem solving is also the most common workplace skill cited in the other surveys. For 18-25-year-olds, communication ranks second, and for 11-17-year-olds it comes third.

Digital literacy and creativity—and the latter's close relative, entrepreneurship—are often cited as essential skills for those who will be operating in the network-filled world of the future. Unlike team working and communication, however, very few respondents list these abilities as vital ones in the current workplace. In none of the surveys does digital literacy or creativity rise above the bottom five on the list of key competencies. However, a majority of employers—the only group asked about likely future demand—expect creativity (58%) and digital literacy (57%) to grow in importance in the next three years.

● **Education systems are not providing enough of the skills that students and the workplace need.**

Only 34% of executives report that they are satisfied with the level of attainment of young people entering their companies. Even more striking, 52% confirm that a skills gap is hampering their organisation's performance. Older students and those entering the workforce paint a similar picture: among 18-25-year-olds, less than half (44%) believe that their education system is providing them with the skills that they need to enter the country's workforce.

Teachers recognise that companies are unhappy with educational standards: only 40% believe that businesses in their country are satisfied with the attainment of students entering the job market, a figure comparable with that of employers themselves.

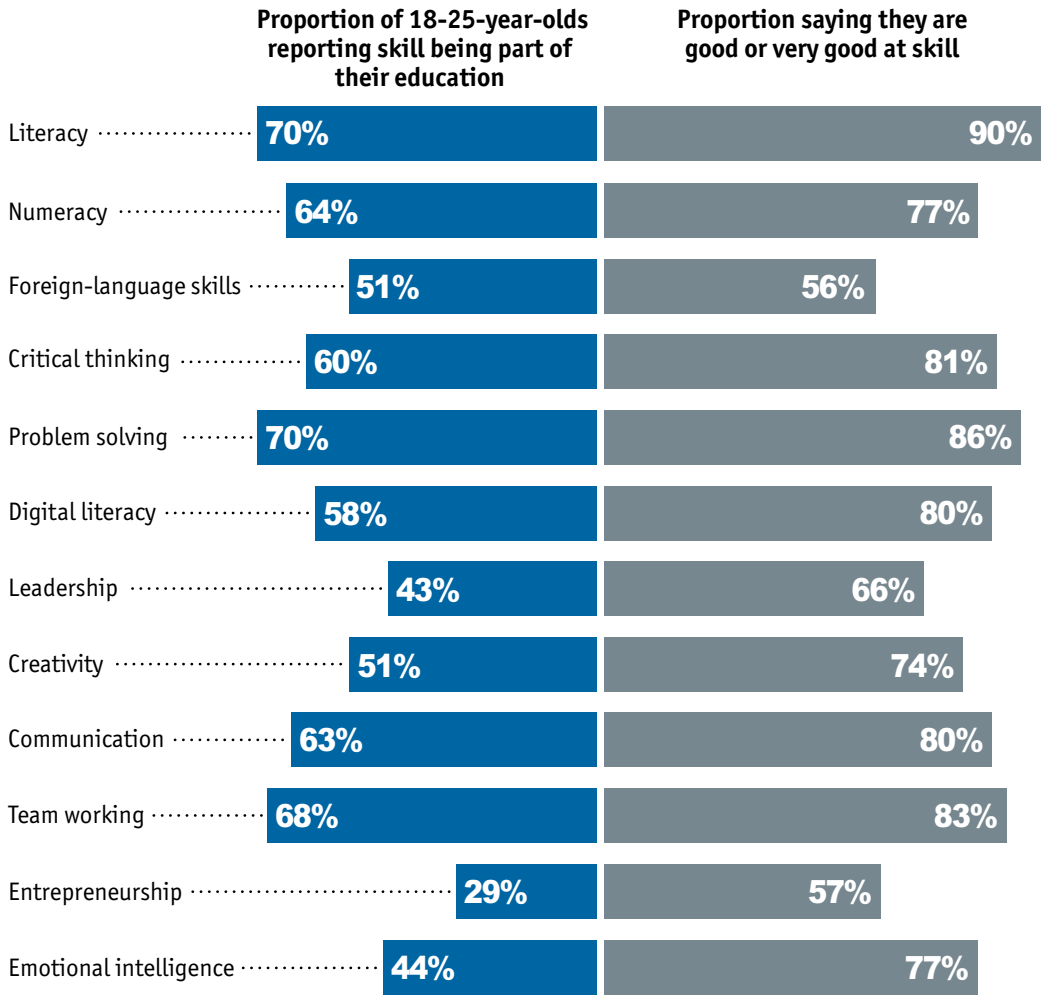
Part of the problem may simply be that many education systems lack the capacity to teach a wider range of skills. Every skill covered in our teachers' survey has seen an increase rather than decline in emphasis over the last five years. Teachers report that lack of time within a strictly regulated curriculum is the biggest barrier to teaching 21st-century skills (49%), while the third most-cited reason is similar: the strict requirements by education authorities that classes focus on literacy and numeracy (30%). This difficulty, however, reflects a lack of innovation in the system as much as a limited number of hours in the day, according to Mr Rush. "The best way to teach 21st-century skills is to embed them in various aspects of the curriculum," not to bolt them on as additional subjects requiring more time, he says.

● **Some students are taking it into their own hands to make up for deficiencies within the education system.**

Despite a minority of 18-25-year-olds reporting that their education had provided them with the skills needed in the workplace, a large majority (77%) are confident or very confident about their career prospects. Similarly, there is a significant difference—in several cases of over 20 percentage points—in the number of students who believe that they have become good or very good at given skills without receiving much formal education in them [see chart].

There may be various reasons for this difference. Several members of our advisory board pointed out that in many countries, notably Asian ones,

Chart 1



Source: The Economist Intelligence Unit.

high-stakes university entrance tests are a common feature. Those anxious to better their chances therefore turn to private out-of-school tuition, making them less likely to attribute their skills to formal education. Moreover, the young have become more used to learning on their own what they are interested in: 62% of teachers report that students are becoming more independent and able to gather information themselves. Whatever the reason, the figures are a salutary reminder against adopting what Mr Zhao calls the "authoritarian" view that "schools have to do the teaching".

● **Technology is changing teaching, but education systems are keeping up with the transformation rather than leading it.**

If changing technology is one of the key drivers in the evolution of which skills are important, what effect is it having on those who teach the skills? On the surface, quite a lot: 85% of teachers report that advances in information technology (IT) are changing the way they teach.

The profession is, however, a long way from the cutting edge of being able to apply technology

in inventive ways. Teachers recognise this as a gap—digital literacy is one of the areas (31%) where they would most like to see further training. Other stakeholders would agree. Only 23% of 18-25-year-olds think that their country's education system is very effective at making full use of the technologies now available. Similarly, just 28% of younger students think that their school is very good at using technology in lessons. A majority of teachers (58%) say their students have a more advanced understanding of technology in their classrooms than they do—an inevitable consequence of the pace of change, but which need not mean that, given the correct training, teachers cannot add value through effective use of technology.

The business executives surveyed agree that broadening access to technology in schools and universities is one of the top three ways in which the education system in their countries could benefit business (31%).

About the research

Driving the skills agenda: Preparing students for the future is an Economist Intelligence Unit (EIU) report, sponsored by Google. It investigates the extent to which the skills taught in education systems around the world are changing, and whether they meet the needs of employers and society more widely.

To shed light on these issues, The EIU convened an advisory board meeting of education experts and conducted four global surveys of senior business executives, teachers and two groups of students, aged 11 to 17 and 18 to 25. Countries represented in the sample include Australia, Brazil, Canada, China, Finland, Ghana, India, Malaysia, Mexico, the Netherlands, New Zealand, Nigeria, the Philippines, Poland, Romania, Russia, Saudi Arabia, South Africa, Spain, Sweden, Thailand, Turkey, the UAE, the UK and the US. Respondents to the business survey hail from 19 sectors, with professional services, manufacturing, IT, financial services and technology especially prominent in the sample.

In addition, The EIU conducted in-depth interviews with education experts and business executives as well as substantial desk research. We would like to thank the following (listed alphabetically) for their time and insights:

- Joshua Baku, head of the Research Department, West Africa Exams Council, and general secretary, Educational Research Network for West and Central Africa
- Svava Bjarnason, senior education specialist, International Finance Corporation, World Bank (advisory board member)
- Paul Cappon, former president, Canadian Council on Learning (advisory board member)
- Sir John Daniel, education master, DeTao Masters Academy (advisory board member)
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- Patrick Griffin, chair, Education (Assessment), University of Melbourne
- Lee Sing Kong, director, National Institute of Education, Singapore
- Mmantsetsa Marope, director, International Bureau of Education, UNESCO (advisory board member)
- Brett O'Riley, chief executive, Auckland Tourism, Events and Economic Development
- Sean Rush, president and chief executive officer, JA Worldwide (advisory board member)
- Andreas Schleicher, director, Directorate for Education and Skills, OECD
- Brian Schreuder, deputy director-general, Curriculum and Assessment Management, Western Cape Education Department
- Dr Helen Soulé, executive director, Partnership for 21st Century Skills
- Sherry Tross, executive secretary, Organisation of American States
- Emiliana Vegas, chief of the Education Division, Inter-American Development Bank (advisory board member)
- Gwyn Wansbrough, managing director, Partners for Youth Empowerment (PYE)
- Professor Rob Wilson, Warwick Institute for Employment Research, University of Warwick
- Yong Zhao, director, Institute for Global and Online Education, University of Oregon (advisory board member)

The report was written by Laura Kenworthy and Dr Paul Kielstra, and edited by Zoe Tabary of The Economist Intelligence Unit.

Introduction

As technology becomes more pervasive, traditional trades disappear and the world of work becomes more globalised, interconnected and collaborative, the skills demanded by employers are shifting.

When information is available at the touch of a button, education is arguably less about filling students' heads with knowledge and more about teaching them how to become effective, lifelong learners capable of responding to a fast-paced world of relentless change. The concept of 21st-century skills is one that has gained increasing currency as a reflection both of changing workplace needs and the evolving role of education. As an umbrella term, it combines the idea that the demands of the 21st century are sufficiently distinct from those of the previous century to make educational reform a necessity, and the belief that instant access to information, and the speed with which that information dates, have rendered a knowledge-based education system defunct.

As proponents of 21st-century skills point out, we have no way of knowing what challenges tomorrow's graduates will face, and still less what jobs will exist for them to apply for. The best education can hope to do is to equip students with sufficiently transferable skills to be able to respond to whatever the future holds.

"We always think that what we have today is what our children will live with tomorrow," says Yong Zhao, director of the University of Oregon's Institute for Global and Online Education. "But our children will create the future. We need to train people to have the creativity to reinterpret the world."

The 21st-century skills concept has its detractors. Too heavy an emphasis on skills as opposed to content is as imperfect as the alternative.

As Sir John Daniel, education master at the DeTao Masters Academy in Beijing, puts it: "One of the problems with the education sphere is that it swings from packing students with knowledge and not much in the way of skills to the other way round—all about skills, and knowledge can come from the Internet." He is sceptical of a near-exclusive focus on skills. "I'd put critical thinking up there as one of the most important skills we should be teaching, but you can't think critically without something to think about."

Programmes such as the Partnership for 21st Century Skills have attempted to delineate the skills required by future graduates and to highlight the gaps between workplace and societal requirements and skills taught in schools. In the OECD's most recent PISA survey, which evaluates global education systems by

> "Our children will create the future. We need to train people to have the creativity to reinterpret the world."
>
> *Yong Zhao, director, Institute for Global and Online Education, University of Oregon*

comparing the skills and knowledge of 15-year-old students, financial literacy and problem solving are included alongside mathematics, reading and science for the first time ever.

The surveys undertaken to inform this report cover the following list of skills:

- Literacy
- Numeracy
- Foreign-language skills
- Problem solving
- Team working
- Communication
- Critical thinking
- Creativity
- Digital literacy (the ability to find, evaluate, utilise, share, and create content using information technologies–such as computers–and the Internet)
- Leadership
- Emotional intelligence (the ability to understand the feelings of others and react accordingly)
- Entrepreneurship

"Workplaces are becoming more team-oriented."

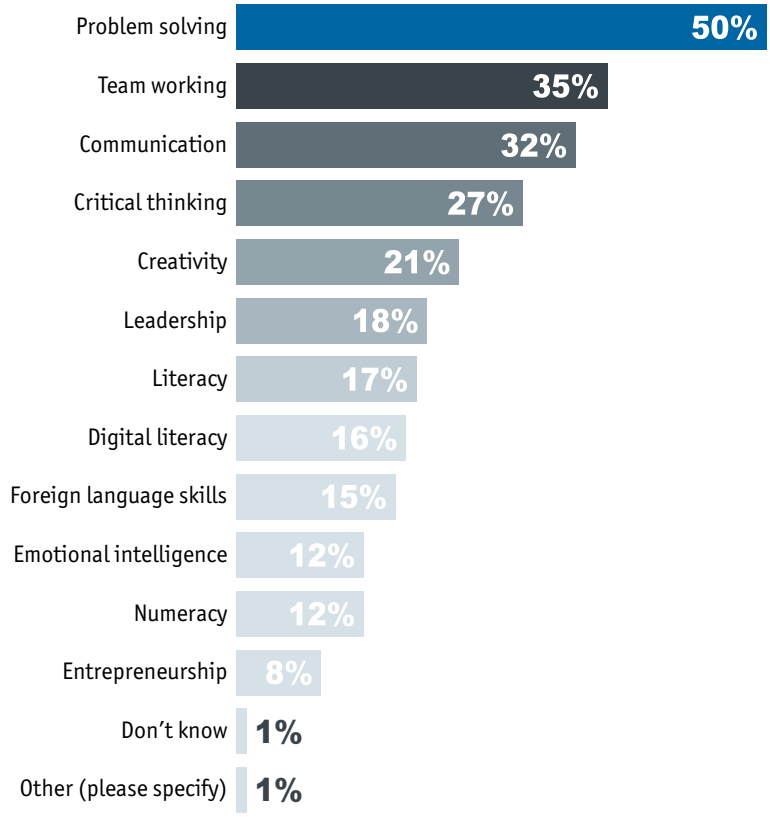
Patrick Griffin, chair, Education (Assessment), University of Melbourne

1 What skills will the future demand?

The lives of today's students are very different from the lives of students for whom the existing education systems were developed. How can education best prepare young people to navigate their way through an increasingly interconnected and complex world in which factual recall will perhaps matter less than their ability to understand differing perspectives?

Chart 2 (business survey)

Q Which of the following would you say are the most critical skills for employees in your organisation to possess today?
Select up to three
(% of respondents)



Source: The Economist Intelligence Unit.

Teachers, students and executives surveyed for this report all list problem solving as the most important skill for students' future. This emphasis is most pronounced among executives, fully 50% of whom place it at the top of the list for potential employees, while 70% expect its importance to increase over the next three years. Teachers appear to be acting on the growing necessity of problem solving, with 59% saying they have placed more emphasis on it in the classroom over the past five years.

If problem solving is to be prioritised as an educational goal, it needs to start early to be effective, teaching the most basic foundational skills with an eye to their practical application. "The school systems that manage to embed problem solving in the curriculum combine real-world contexts with information, for example using maths and science to solve practical problems rather than abstract ones," says Emiliana Vegas, chief of the Education Division at the Inter-American Development Bank. "Good school systems do this as early as pre-school—everything which we used to learn in theoretical terms is contextualised."

The need for effective problem solving skills is a universal one, according to experts.

"From a Ghanaian perspective, students go to school and think their main purpose is to pass exams, but exams are temporary," says Joshua Baku, head of the Research Department at the West Africa Exams Council and general secretary of the Educational Research Network for West and Central Africa. "It's outside the school walls that problems begin. Students need to be taught not

to run from problems but to address them and develop solutions." Businesses surveyed for this report concur: employers from both developed (US, UK, Canada…) and developing countries (China, Brazil, Mexico…) place problem solving at the top of their list of critical skills.

By encouraging students to work out answers for themselves and to think of the applications and consequences of a theory or decision rather than accepting an answer they are given, schools can build problem solving skills into the way students learn throughout their education. Across the curriculum, students can be encouraged to identify a problem and generate potential solutions through discussion and evaluation, a method which ensures that they fully understand the answer they arrive at.

The high value given to team working, which is placed at the top of the list of skills by 35% of executives and 32% of teachers, reflects the increasingly interconnected way in which we live our lives. The ability to appreciate alternative perspectives and interact constructively with people with different skills and viewpoints is vital both in and out of work.

"Workplaces are becoming more team-oriented," says Patrick Griffin, chair of Education (Assessment) at the University of Melbourne. He uses the example of a jigsaw puzzle in which the pieces are split between two people, neither of whom can complete it without the resources of the other; or a crossword puzzle, where one party has all the clues going across and the other has those going down.

"It's about understanding how to pool resources and work together. We need to build a curriculum where students can learn to work together—to be responsive to the group, look at their own strengths and weaknesses and those of others and adjust their own behaviour accordingly."

Amit Dar, director of Global Education at the World Bank, concurs. "Knowledge matters when hiring someone, but what I'm really looking for is a team player. Part of team working is inherent as a skill, but you can start developing it at a very early age—by getting children to work in teams rather than sitting at their own desk, for example."

Communication also makes it into the top three for students (both 18-25 and 11-17-year-olds) and executives, while teachers place it fourth. However, while this reflects a general consensus on the importance of communication, it means different things to different people. Effective oral communication is a fundamental tool to function in both work and society more broadly, but some employers fear that equally vital written communication skills are being lost.

"Communication as it's referred to today tends to mean oral communication, but then you have employers complaining that people can't write a coherent sentence," says Sir John Daniel.

These skills may already feature in mainstream education to a certain extent. Among survey respondents aged 18 to 25, 70% report that problem solving has formed part of the education they have received to date, while 68% say the same of teamworking and 63% of communication. A majority of teachers also include these skills as part of their teaching. The survey reveals some differences in student perceptions: nearly half (48%) of US and UK 18-25-year-olds describe their problem solving skills as very good, compared with just 14% of Chinese students—perhaps reflecting how education systems have or have not prioritised these skills to date.

The importance of communication raises the issue of language. On the surface, foreign-language skills do not rank highly overall on the list of key workplace skills, but they are the competency that executives cite most frequently as missing within their company (28%). Unfortunately, education systems do not seem able to fill this gap. Foreign-language skills are the area where teachers are the least self-assured, with just 16% of this group feeling very confident in teaching them.

Some skills which survey respondents cite as likely to be increasingly important in the future are given a surprisingly low priority as key skills for today. Digital literacy, entrepreneurship and creativity are among the lowest-ranked essential skills among all business executives, teachers and students. Does this imply that they may not be as integral as they are often thought to be, or rather that they are considered so fundamental that they do not provide any useful distinction between potential employees?

Digital literacy would appear to fall into the latter camp, although any assumption that graduates will automatically be equipped with the necessary skills in this area may be misplaced—just 27% of teachers claim to be very confident in developing digital literacy in their students. Only entrepreneurship and foreign languages rank lower, suggesting that digital skills, like languages, may still be seen as the responsibility of subject specialists rather than being incorporated more broadly into the curriculum.

Increasingly, a lack of digital literacy seems likely to hold people back in the workplace, although just 17% of students aged 18 to 25 believe they would need to have digital literacy to be successful in the labour market.

"ICT skills are no longer an option; they're basic skills for operating in society," says Brett O'Riley, chief executive of Auckland Tourism, Events and Economic Development. "In New Zealand parents still think that ICT in the classroom refers to kids training for the ICT sector. We do have a shortage of ICT professionals, but ICT skills are needed for any job."

According to Sherry Tross, executive secretary of the Organisation of American States (OAS), digital literacy now forms a fourth strand alongside traditional foundational skills. "Digital literacy has become a fourth literacy added to reading, writing and arithmetic. Like other forms of literacy, it helps in decoding information, solving problems and discovering meaning in words or data."

Whether or not employers, teachers or students cite it as such, it seems clear that digital literacy is an essential skill, though perhaps one with which today's students, as digital natives, are better equipped than their teachers.

Entrepreneurship, however, is more divisive. While education experts view it as a key skill, it is rarely listed as such by students or teachers, while employers may prefer not to hire staff who are looking to rock the boat.

As Brian Schreuder, deputy director-general of Curriculum and Assessment Management at the Western Cape Education Department points out, however, entrepreneurship can be crucial to those living a more hand-to-mouth existence. "In South Africa we have 25% youth unemployment. Young people need streetwise skills, entrepreneurial skills, the ability to move in and out of work."

Interestingly, Mexico, the UAE and India are the countries where most employers surveyed place an emphasis on entrepreneurial skills, cautioning against a narrow interpretation of entrepreneurship thriving only in developed countries. Employers in the UAE and Mexico also value creativity more than the average in the survey.

> "ICT skills are no longer an option; they're basic skills for operating in society."
>
> *Brett O'Riley, chief executive, Auckland Tourism, Events and Economic Development*

Case study – The hook from heaven

For participants in the Manaiakalani ("the hook from heaven") Education Trust, access to digital resources has been the key to an entire suite of 21st-century skills. The New Zealand-based programme works with students in one of Auckland's most disadvantaged communities. It supports parents to buy a digital device for their child and provides wireless Internet access both at home and at school to allow all students to follow an ongoing learning support programme in their own time. Meanwhile, schools are encouraged to adopt teaching techniques which promote group discussion and critical thinking skills.

"It's a new approach to learning and lifts the community ahead," says Brett O'Riley, CEO of Auckland Tourism, Events and Economic Development, who acts as one of the programme's trustees.

Participating families pay NZ$3.50 (about US$2.65) a week for their child's digital device. The contribution is not a negligible one for a low-income household, particularly as many in the community have large families, but it ensures that parents have taken a positive decision to support their children's learning through the programme. This parental buy-in is essential, as working at home forms a key element of the approach.

"Kids can log on at home, so the learning day is extended," explains Mr O'Riley. "There's a teacher dashboard, so both teachers and parents can monitor what the child's been working on. In the schools which take part, you see young children working in groups, interacting with the teacher through a dashboard. It's dynamic, innovative and much less formal than a traditional classroom."

The results are impressive. With the University of Auckland tracking its progress, the Trust has well-documented evidence of the impact it is having. In its first year of involvement one school, Tamaki College, doubled the number of Maori and Pasifika students (the principal targets of the scheme) achieving level 2 in the National Certificate of Educational Achievement. The following year 80% of students achieved this benchmark, compared with 43% before the programme began. Literacy and numeracy standards have improved in all participating primary schools, with some that were previously well below the national average now surpassing it.

"The Trust aims to empower disadvantaged youth through ICT skills. It enables social mobility, giving students from that community a wider perspective on the world, which would hardly be possible in a non-digital age. It's given the whole community a sense of aspiration."

2 How are skills of the future best taught?

> “Education systems need to provide students with hands-on learning that mirrors real-world problems and work opportunities in an interdisciplinary way.”
>
> *Dr Helen Soulé, executive director, Partnership for 21st Century Skills*

According to experts interviewed for this report, 21st-century skills cannot be taught in isolation. In order to be effective, they must be integrated into every subject area, so that skills development becomes inseparable from the sharing of knowledge. As Sir John Daniel points out, this approach is not unique to the 21st-century skills debate.

“When I worked in a university in Ontario, English and French were indirectly inculcated across the curriculum, so that geography professors were expected to pick up on misuse of language. That’s the only way to develop any of these skills. If you want to foster oral communication skills, for example, holding a debate in the context of history is more lively than in isolation.”

At the French-American School of Rhode Island (FASRI) in the US, the teaching of 21st-century skills is consciously intertwined with the fact that the school provides a dual-language education. It emphasises the importance of communication in both French and English across all disciplines, encouraging students to gain experience of public speaking, networking and writing. Critical thinking is taught through the literature of both cultures as well as through philosophy and history, while collaboration and teamwork are modelled by staff operating in a dual-language context.

Dr Helen Soulé, executive director of the Partnership for 21st Century Skills (P21), which has developed its own framework to support schools in skills development, agrees that a cross-curricular approach is key. At the heart of the framework are what P21 terms “the four Cs”—communication, collaboration, critical thinking and problem solving, and creativity and innovation.

“When students possess these skills alongside content knowledge, they are more likely to be successful in college, in the workplace and as citizens”, she says. “Education systems need to provide students with hands-on learning that mirrors real-world problems and work opportunities in an interdisciplinary way. These new types of skills cannot be taught in isolation but must instead be suffused throughout the curriculum.”

If this is to become a reality, it requires the upskilling of all teachers to enable them to effectively foster skills at the same time as teaching content. For some school systems, this would mean a complete reinterpretation of the role of a teacher.

“Traditionally, teachers have been paid for their skill in imparting knowledge,” says Professor Griffin of Melbourne University. “This is anachronistic. The teacher’s role is now about teaching how to work effectively. Teachers need to develop these skills themselves, which means we need to change pedagogical training.”

However, as Professor Griffin points out, if skills can be developed regardless of the surrounding content, that gives schools a degree of freedom in how they choose to incorporate 21st-century skills training into their curriculums. “Students need to be able to analyse information, manage resources, assess the contribution of individuals to the group, and take responsibility for

particular tasks. But it doesn't matter whether students learn them in history or chemistry."

Education systems are slowly waking up to this idea. The Australian state of Victoria is looking at implementing state-wide training to help teachers incorporate skills training into their lessons, while Taiwan's Ministry of Education introduced in 2014 a policy of reshaping education to enhance students' creativity, employability, information competence and interdisciplinary ability.

School 21, a free school in Stratford, East London, was founded in 2012 to meet the needs of 21st-century learners aged 4-18. Oral communication is heavily emphasised as a vital skill, with "oracy" lessons teaching students to express themselves clearly and tailor their speech to their audience. Technology is integrated into the curriculum, from the use of iPads by students to critique each other's work to e-portfolios, blogging and making videos. The school encourages student leadership and responsibility wherever possible and includes one-on-one coaching for all students to support their individual learning.

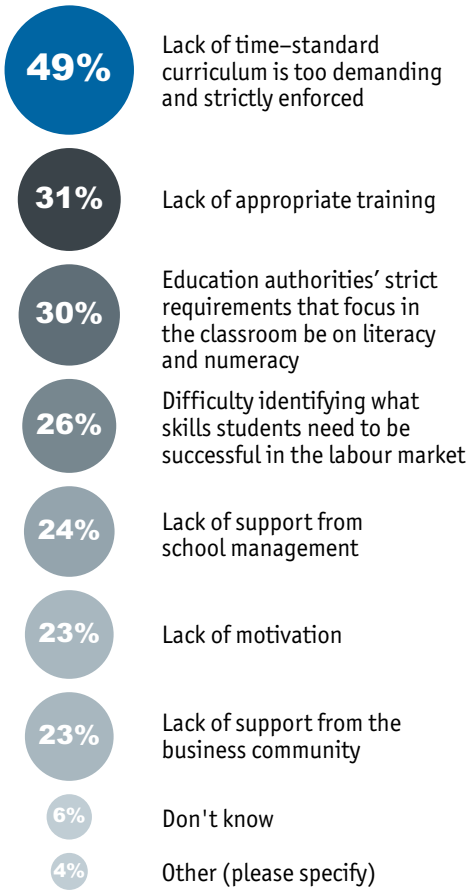
In the US, Two Rivers Public Charter School in Washington, DC takes an interdisciplinary approach to skills development by embracing projects. For example, first-grade students involved in running the school's snack bar raised money to create a children's library at DC General Homeless Shelter. By conducting surveys to assess customer feedback, deciding what snacks to offer as a result and engaging with the shelter, the children developed their learning across a range of subject areas, while also becoming adept at problem solving and communication as well as collaborative and entrepreneurial skills.

The greatest barrier to incorporating skills training more broadly into mainstream education appears to be the rigidity of existing curriculums: 49% of teachers find that the curriculum is too rigid to allow time for wider skills to be fostered.

Chart 3 (teacher survey)

Q **To incorporate "21st-century skills" in any way into your daily teaching, which are the biggest challenges you have faced to date?** Select up to three

(% of respondents)



Source: The Economist Intelligence Unit.

However, as Andreas Schleicher, director of the OECD's Directorate for Education and Skills, highlights, skills can be taught through the traditional subject base—often more effectively than when they are self-consciously administered as a separate focus. He points to countries such as the Nordics and Singapore creating learning environments which strengthen both cognitive and character skills such as tolerance, resilience and leadership.

At Waggrakine Primary School in Geraldton, Western Australia, a three-year programme to

implement 21st-century teaching and learning throughout the school has created a renewed focus on empowering lifelong learners. Teachers aim to bridge the gap between what students learn in school and what they do in real life, by linking the curriculum wherever possible to external contexts and creating links with schools in Asia as well as across Australia to establish a global outlook and share best practice.

Inculcating 21st-century skills is not solely the responsibility of schools, however. Partners for Youth Empowerment (PYE) is an international non-profit organisation training teachers, youth workers, artists, therapists and programme leaders to engage young people to develop creative life skills. "Young people respond positively to adults who are creative and model the kinds of skills that they want to develop in their students," explains Gwyn Wansbrough, managing director at PYE. "Our approach at PYE consists of learning by doing. For example, we draw on practices from improvisation theatre to develop adaptability, flexibility, collaboration and communication."

Ms Wansbrough believes that while PYE has to date focused on opportunities for skills development outside of schools, its training model is fully translatable to the context of formal education. "The education sector is grappling with questions about how to engage learners, stay relevant and recognise other sources of knowledge that young people have access to that didn't exist a generation ago," she says. "Creative facilitation can help teachers adapt to the evolving needs of their students."

Technology has a central role to play in skills development. However, education rather than being at the forefront of technological change seems to be struggling to keep up, both with the pace of advances and with students. Even in primary schools, fully half of teachers feel that their students have a better understanding of the technology in their classroom than they do, a proportion which rises to 58% when the responses of secondary teachers are factored in. This proportion is highest in Australia, the UAE and New Zealand.

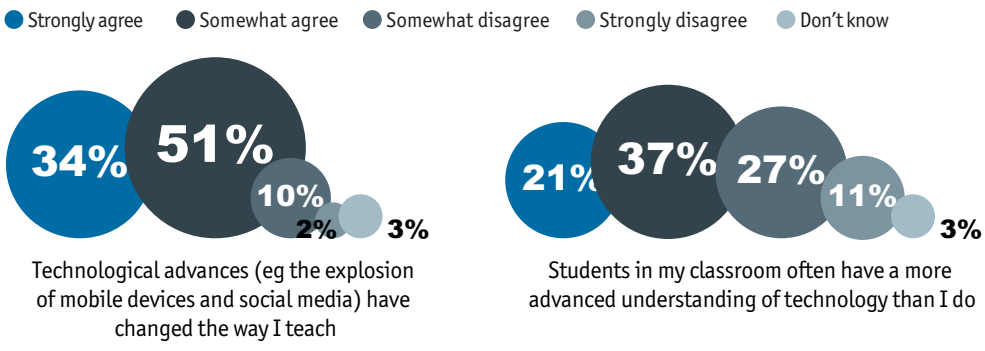
Although just over half (51%) of teachers say that technological advances have changed the way they teach, one-quarter are not confident of their ability to use the technological tools they have access to in school, and the same proportion say they are not equipped with the technology they need.

Students themselves also appear to lack confidence in the ability of schools to take advantage of the tools available to them. Just 28% of students aged 11 to 17 think that their school is very good at using technology in

> "Young people respond positively to adults who are creative and model the kinds of skills that they want to develop in their students."
>
> *Gwyn Wansbrough, managing director, Partners for Youth Empowerment*

Chart 4 (teacher survey)

Q **To what extent, if at all, do you agree or disagree with the following statements?**
(% of respondents)



Source: The Economist Intelligence Unit.

lessons. The cohort aged 18 to 25 is even more damning, with 34% describing their country's education system as ineffective in making use of new technologies, and just 23% believing it is very effective.

Increased use of technology also tops the list of the changes students aged 11 to 17 would most like to see in their school, by a margin of 14 percentage points. This is particularly true in Spain, Russia and Mexico, where respectively 68%, 63% and 58% of young students call for more technology to be used in schools.

It comes as no surprise that students born into a world of social media and mobile devices are more at home in it than their seniors. As Sean Rush, president and chief executive officer of JA Worldwide, a non-profit youth organisation, says: "Students are light years ahead of their teachers—they don't remember a world without these tools."

This sense that schools may be missing a trick in failing to make full use of the technologies to which students dedicate their leisure time is echoed by other experts.

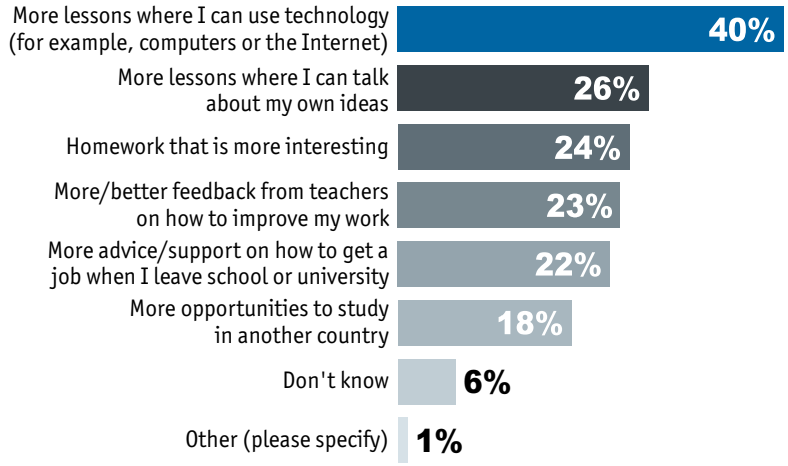
"Young people have an innate affinity with technology, and it would be a shame not to utilise that effectively," says Mr Schreuder. "South Africa has a far greater gap between the educational outcomes of rich and poor students than elsewhere in the world, and if we do nothing, technology will exacerbate that. But if you provide technological access to poorer kids and point them in the right direction, it enables individual learning, networking and collaboration."

Distance learning through online content also has the potential to transform the access students have to education. Mr Dar at the World Bank believes it could have a significant role to play in compensating for substandard teaching.

"The quality of teaching in some developing countries can be pretty weak. If teachers' input could be supplemented with more effective and standardised learning, that could have a big impact. But the content needs to be locally relevant and updated regularly—it's not enough just to supply content as a one-off."

Chart 5 (survey of 11-17-year-olds)

Q What changes, if any, would you most like to see in your school?
(% of respondents)



Source: The Economist Intelligence Unit.

Part of the value of technology is that it can respond to the strengths and weaknesses of a given student in a way that a teacher with a class of 50 would struggle to recreate. Similarly, it can allow far greater numbers of students to be actively and simultaneously engaged than would otherwise be the case. Schools in Singapore regularly encourage students to submit questions during class via instant messaging software, allowing the teacher to see what students are thinking about, even without the time to call on them all. However, this is far from being the norm elsewhere.

"Technology has been absorbed into a great deal of industries, but education has been much slower to change—classrooms often look as they did 100 years ago," says Ms Vegas of the Inter-American Development Bank. "It's a reality that kids have access to mobile devices and social media, but the way teachers respond is consistent

with the way education has stayed behind the times—there's a tendency to ban them."

Mr Zhao of the University of Oregon sees the growth of technology as part of a democratisation of information, but cautions that it is not sufficient on its own. "Teachers have historically monopolised classrooms in terms of information. But if we think the Internet means we don't need teachers we're wrong—we need someone to take care of the human aspect."

"Technology has been absorbed into a greatdeal of industries, but education has been much slower to change."

Emiliana Vegas, chief of the Education Division, Inter-American Development Bank.

Case study – Teach less, learn more

Regularly credited with having one of the most successful education systems in the world, Singapore has a reputation as a high-pressure environment focused on test scores. But over the past decade its emphasis has shifted towards a more holistic approach and the development of lifelong learning skills.

Launched in 2006, "Teach less, learn more" aims to help schools and teachers to engage more effectively with students, so that they connect what they are with what they are learning and how and why they are learning it.

Professor Lee Sing Kong, director of the National Institute of Education, explains: "The 20th-century classroom was designed with a very teacher-centric approach to education. If you want 21st-century skills, you need a 21st-century learning environment which encourages team-based learning and discussion."

The initiative takes as its starting point the assumption that more teaching is not in and of itself a good thing, particularly in a country which has traditionally force-fed its students facts in pursuit of high grades. Instead, it aims to deliver more skilful teaching and more sustained student engagement.

"The curriculum focuses on being able to apply, rather than absorb, knowledge," says Professor Lee.

To this end, individual schools have been given greater autonomy over how they teach, designing their own curriculums in line with agreed national strategies. Overall, the content of most subjects has been cut by between 10% and 20%, according to the Ministry of Education.

The country has also broadened the range of subject areas offered and assessed, providing students with a greater choice of prospective pathways.

Through a chain of "Future Schools", Singapore has showcased its vision of the education system to come. With a heavy emphasis on the acquisition of skills such as teamwork, problem solving and critical thinking, the schools also make full use of digital devices, software, interactive keyboards and social media.

An engrained societal belief in the value of exams and a tradition of pressurised, competitive, high-stakes education have by no means been swept away. Nor is Singapore's example necessarily straightforward to replicate elsewhere—the country has the advantage of being both wealthy and small, with a long-standing practice of valuing and respecting teachers.

However, if a country whose focus has been so habitually test-based can decide to reprioritise, however incompletely, then this surely offers food for thought to the rest of the world.

3 Are schools failing to equip students for the world of work?

Internationally, employers appear to be struggling to find young people with the skills they need. Over half (51%) of executives surveyed say a skills gap is hampering their organisation's performance, and only 34% claim to be satisfied with the level of attainment of young people entering the company. A 2014 report by McKinsey, *Education to Employment: Getting Europe's Youth into Work*, found that this gap could have a significant impact on firms' performance, ultimately affecting the wider economy: 27% of employers surveyed for the report said they had left entry-level jobs unfilled because of a lack of applicants with the required skills.

Students also appear to lack confidence in the relevance of their education: just 44% of students aged 18 to 25 believe that their education system is providing the skills they need to enter their country's workforce.

Experts diverge as to whether this is the problem of the education system or of businesses themselves. "Employers often say it's hard to find what they want, but if you press them, it's not clear what they do want," says Professor Rob Wilson at the University of Warwick's Institute for Employment Research. "There are lots of skills which are specific to particular industries, and I'm not sure it's the business of state-funded education to be providing sector-specific training."

The nature of the gap, however, is ambiguous. In some sectors or countries it simply reflects the fact that too few students are choosing to train for the industries which most need them.

Mr Baku of the West Africa Exams Council believes this is particularly acute in Ghana. "There's very little co-operation between the job market and education. Everyday jobs are advertised for which there are no takers because no-one has the required skills. The first priority of the average student seeking higher education is not the relevance of the course or what employment it will lead to. They just want a certificate so they will be counted among the elite of the country."

But even when students are purportedly studying a subject suitable for a career in a particular field, there appears to be a mismatch between what they are taught and what employers require.

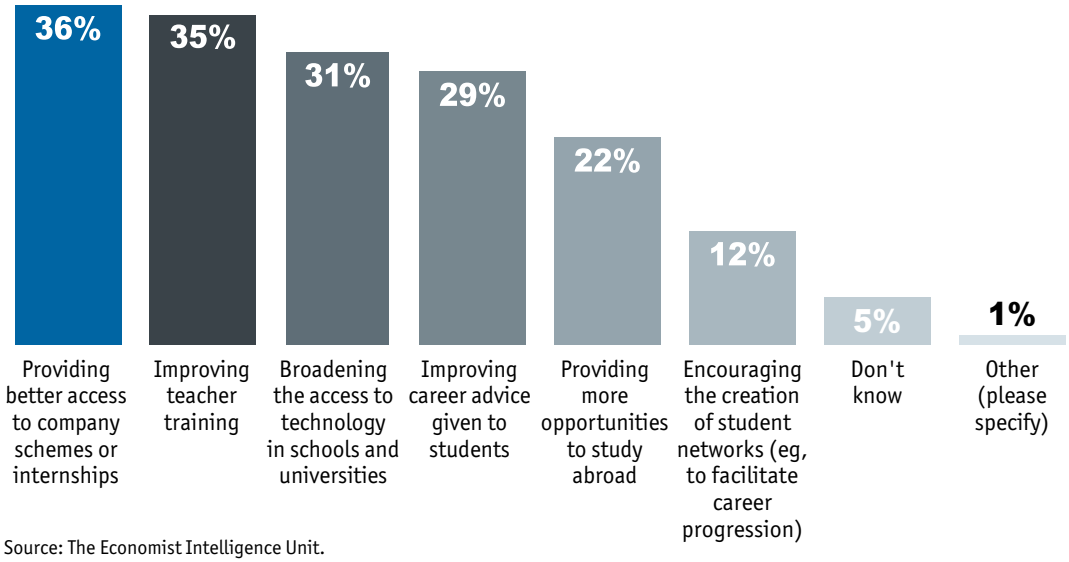
"There is a disconnect between the demand-side and the supply-side of skills," notes Mmantsetsa Marope, director of the International Bureau of Education at the United Nations Educational, Scientific and Cultural Organisation (UNESCO). "Education systems, or should I say educators, hardly ever talk to businesses, to employers, to parents, to a whole range of stakeholders who are on the demand-side of the competencies which they are supposed to facilitate learners to acquire."

Greater collaboration between schools and industry—whether through work placements, industry involvement in course planning or industry representatives brought into schools to demonstrate the real-world application of theories and techniques—appears to be key to improving students' readiness for work. In Germany, for example, 60% of school leavers continue their education by means of "dual vocational training" (rather than attending university or a full-time vocational college). Under the dual system, students are employed as apprentices and trained on the job by their employers, while also attending vocational college one or two days a week. This system, and the resulting close interaction

Over half (51%) of executives surveyed say a skills gap is hampering their organisation's performance.

Chart 6 (business survey)

Q **Which of the following changes to your country's education system, if any, do you think would benefit your business?**
Select up to two
(% of respondents)



Source: The Economist Intelligence Unit.

between employers and educators, is credited with contributing to the country's low level of unemployment.

According to the business survey, employers feel they should play a more active role in deciding what students are taught and that their position as stakeholders should be more explicit. Nearly three-fifths (57%) of executives think business does not have enough say in setting the curriculum in their country, while 36% identify improved access to company schemes and internships as the educational change that would most benefit their business. The latter proportion tends to be higher in developing than developed countries, with the exception of Spain, where employers' appetite for more company schemes and internships may be explained by the high level of youth unemployment in the country.

But sector-specific skills training may not be the whole answer, not least because the world is changing so fast that training that is too specific is liable to date quickly. "Employers will often say, we can teach skills, but not willingness to work," says Mr Dar. "Inculcating that willingness early on is crucial."

While employers may be willing to top up the knowledge and training of bright recruits, it is soft skills whose absence leads to greater problems.

"CEOs argue that young people don't seem to have social graces and interpersonal skills such as respect, as well as the ability to work on their own without having someone looking over their shoulder all the time," says Mr Schreuder. "They need to understand deadlines, to be able to work under pressure, to prioritise. They ought to have lifelong learning skills and to understand that learning happens all the time."

Ms Vegas agrees. "In Latin America, socio-emotional skills are a big part of the gap between what employers need and what young people have. For example, tourism companies need people who will smile and be polite to guests, and often graduates just don't possess those public-facing techniques."

4 Are 21st-century skills an elite concern?

While it's easy to find support for the idea that 21st-century skills are at the centre of what a contemporary education system ought to be providing, they are not universally seen as a high priority. For many students currently in education, literacy and numeracy are a greater concern.

"One key challenge that we're seeing in developing countries is the lack of basic foundational skills such as literacy and numeracy," says Mr Dar. "Many students are coming out of education without them and are entering the labour market underequipped. If you lack them at an early stage, it's very difficult to catch up later."

The OECD's Mr Schleicher is similarly cautious about placing too heavy an emphasis on 21st-century skills. "The 21st-century skills agenda is a double-edged sword. It can lead to the temptation to keep adding things to the curriculum, resulting in a curriculum which is mile-wide but inch-deep."

Are skills such as problem-solving, creativity, communication and team working a luxury add-on that a country can only afford to consider once it has mastered the basics? According to Ms Vegas, the need to improve levels of basic skills does not exempt a country from the need to also foster soft or non-cognitive skills in its students.

"In Latin America, there is still a tremendous need to get kids out of school with competencies in reading and maths, which many aren't achieving," she says. "But on top of that there is a need for social skills, which historically families have been left to provide. In the past you'd train for a specific and secure job, but the jobs people do today may not exist in three years. What is key now is how quickly you can adapt to changes in education and the job market, and how you access information."

One problem with incorporating skills development into the school curriculum in developing countries is that it is difficult to reconcile with a heavy dependence on rote learning. It requires significant investment in the professional development of teachers to enable them to demonstrate the skills we expect them to inculcate in their students.

"Teachers need to understand that these are not taught skills but modelled skills," explains Mr Schreuder. "You can't just add them to the curriculum and hope students will learn them, without systemic planning. It needs to be entrenched and specified upfront as a goal of education."

He adds: "Our current curriculum appears to be a bit reductionist. Instead of opening up to the skills of the future, we seem to be narrowing our focus to maths and sciences. Kids have an innate curiosity, and yet we kill that by the end of junior school with a focus on rote learning and regurgitation of facts."

> "Teachers need to understand that 21st century skills are not taught but modelled."
>
> *Brian Schreuder, deputy director-general, Curriculum and Assessment Management, Western Cape Education Department*

Case study - Digital classrooms

The Bangladeshi government has taken a proactive and methodical approach to the need to develop greater digital skills in the next generation with the introduction of multimedia classrooms in schools across the country.

The National Education Policy, introduced in 2010, emphasises the importance of audio-visual equipment in schools, particularly in English classes. To date, 20,500 secondary and 1,515 primary schools have been equipped with laptops, projectors and Internet modems, while teachers have received training in integrating information and communications technology (ICT) into their lessons. The introduction of the new technology has been accompanied by an increase in group learning, Q&A sessions and project-based study.

From the teachers' perspective, the equipment enables them to reuse or modify resources as well as develop content that meets the needs of their students. It has also led to a rise in collaboration between teachers, as it makes sharing and comparing materials far easier.

According to a report by Save the Children, a non-governmental organisation promoting children's rights, ICT is as a result being used far more widely for teacher training and networking purposes, as well as for the development of e-content. However, it has yet to be significantly used to support student assessment or e-learning.

The British Council, which has supported the spread of multimedia classrooms, hosted a three-day conference in 2014 to promote digital learning ideas throughout Bangladesh. The conference encouraged the use of the equipment in the development of 21st-century skills, including communication, critical thinking, creativity, data analysis, teamwork, task management, learning to learn and digital literacy.

Conclusion

While it may be true that information can be accessed at the touch of a fingertip and that "teachers are no longer the oracle", as UNESCO's Dr Marope puts it, it does not necessarily follow that the sharing of knowledge no longer has a crucial role to play. A teacher's input in filtering, sharing and explaining content is as critical today as it has ever been.

What has changed, however, is the expectation that the knowledge which is considered important today is the same knowledge that will be needed tomorrow. A recognition of the pace of change, both in the workplace and in society more broadly, pervades the responses to this report's surveys and interviews. Education must therefore concern itself more than ever with the development of skills to interrogate knowledge, to find it for oneself, and to respond to rapidly changing situations.

The traditional classroom, with a teacher at the front and the students in serried ranks, has had its day, as has rote learning as the core of education. Instead, interviewees are unanimous in emphasising the importance of group discussion, giving students the opportunity to work things out for themselves, while also learning how to respond to the differing skills and opinions of their peers. Effective collaboration, crucial in almost every sector, is a difficult habit to acquire as an adult.

This style of learning places new demands on teachers, who may themselves not be universally equipped with the competencies to lead a more fluid, interactive class. It also requires governments to be willing to rethink their approach to teacher training and professional development. It is no longer sufficient—if it ever was—that teachers are well versed in their subject. They must recognise that the skills a student acquires through learning are as important, if not more so, than the content, and be able to incorporate opportunities for the development of problem solving, collaborative, creative and communication skills into their teaching. These skills cannot be taught in isolation but must be present across the curriculum, embedded in the fabric of how teachers teach.

Technology has a valuable role to play and offers opportunities to level the playing field, giving students access to tools and teaching from around the world and broadening their horizons. However, this can only happen by deliberate and careful design, by providing access to technological support to those who need it most. Unchannelled, technology has the potential to simply deepen inequity by offering ever greater opportunities for advancement to those who can afford to take advantage of it.

It is impossible to say what challenges will confront today's students, or what the workplace of the future will look like. Ensuring that they leave school with the habit of learning well established will, as Ms Tross of the OAS puts it, "prepare students for a world not yet known". ■

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GALLUP

Lumina FOUNDATION

THE 2014 GALLUP-LUMINA FOUNDATION STUDY OF THE AMERICAN PUBLIC'S OPINION ON HIGHER EDUCATION

POSTSECONDARY EDUCATION ASPIRATIONS AND BARRIERS

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Lumina Foundation, an Indianapolis-based private foundation, is committed to enrolling and graduating more students from college — especially 21st century students: low-income students, students of color, first-generation students and adult learners. Lumina's goal is to increase the percentage of Americans who hold high-quality degrees, certificates and other credentials to 60% by 2025. Lumina pursues this goal in three ways: by identifying and supporting effective practices, through public policy advocacy and by using communications and convening power to build public will for change.

More information is available at **http://www.luminafoundation.org**.

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INTRODUCTION

Americans understand that a postsecondary education is the key to finding a better job and building a better life. This lesson hit home during the recent recession, when four out of five jobs lost were ones that required a high school diploma or less.[1] Though the economy has improved, most U.S. adults say that a degree will be just as important or even more important in the future to getting a good job.

Hispanics and blacks are more likely than whites to say it is very important to increase the proportion of Americans with a degree or professional certificate beyond high school. Many say they have taken steps to attaining a degree, including completing a financial aid form, talking to a college adviser or recruiter and researching degree programs. However, blacks and Hispanics continue to lag behind the average degree attainment rate in the U.S.

Majorities of adults in the U.S. say that higher education is not affordable for everyone who needs it. They also note that graduates are not always adequately prepared for success in the workplace. To contribute to the dialogue surrounding postsecondary education in the U.S., Lumina and Gallup have gauged the American public's opinion over the past four years on the most pressing issues facing higher education today, including cost, access, quality and workforce readiness. This study can help inform what thought leaders and ALL Americans need to know about the value and opportunity that quality higher education affords.

Some questions addressed in the public opinion poll on higher education include:

- How important is it for adults in this country to have a degree or professional certificate beyond high school?
- How important is attainment of a degree or professional certificate in getting a good job?
- Are adults in the U.S. completing their postsecondary education?
- What are U.S. adults doing to pursue postsecondary education, both for themselves and for others?
- Do you think education beyond high school is affordable for everyone in this country who needs it?
- What is a reasonable amount of loan debt for an undergraduate student to accumulate to obtain varying types of degrees?

SNAPSHOT OF FINDINGS

- Nearly all (96%) say it is somewhat or very important for adults in this country to have a degree or professional certificate beyond high school.
- A majority (94%) say it is somewhat or very important to increase the proportion of Americans with a degree or professional certificate beyond high school.
- Most (93%) say that it will be just as important or more important in the future to have a degree or professional certificate beyond high school in order to get a good job.
- More than three-fourths (78%) agree or strongly agree that a good job is essential to having a high quality of life.
- Fewer than one in five (19%) agree or strongly agree that they are confident that having only a high school diploma can lead to a good job.
- Seventy-nine percent of adults in the U.S. say they do not think education beyond high school is affordable for everyone in this country who needs it.
- Eight in 10 (80%) agree or strongly agree that colleges and universities need to change to better meet the needs of today's students.

[1] Lumina Foundation: http://www.luminafoundation.org/facts-and-figures

SECTION 1: MAJORITY BELIEVE IN THE VALUE OF POSTSECONDARY CREDENTIALS

DEGREES AND PROFESSIONAL CERTIFICATES WILL BE EVEN MORE IMPORTANT IN THE FUTURE

In today's highly competitive global economy, nearly all U.S. adults (96%) say it is somewhat or very important to have a degree or professional certificate beyond high school. U.S. employees' workplace skills are falling behind those of their counterparts in developed nations,[2] underscoring the need for a more educated working population to help the country compete on a global scale. About six in 10 (61%) U.S. adults say it is very important to increase the proportion of Americans who have a degree or professional certificate beyond high school, higher than the 51% who said the same in 2013[3]. The majority (69%) say a degree or professional certificate will be more important in the future to get a good job.

Hispanics (72%) and blacks (73%) say it is very important to increase the proportion of Americans with a degree or professional certificate beyond high school, compared with 56% of whites. Looking ahead, 78% of Hispanics, 74% of blacks and 67% of whites say having a postsecondary degree will be more important in the future to get a good job.

	% Not at all important	% Not very important	% Somewhat important	% Very important
How important is it for adults in this country to have a degree or professional certificate beyond high school?	2	3	27	69
How important is it to increase the proportion of Americans with a degree or professional certificate beyond high school?	2	4	33	61

In your opinion, how important will it be in the future to have a degree or professional certificate beyond high school in order to get a good job?	
More important	69%
Just as important	24%
Less important	7%

[2] Organisation for Economic Co-Operation and Development. (2013). "OECD Skills Outlook 2013," http://skills.oecd.org/skillsoutlook.html

[3] Lumina and Gallup (2013). "What America Needs to Know About Higher Education Redesign," http://www.gallup.com/services/176759/america-needs-know-higher-education-redesign.aspx

GOOD JOBS AND GOOD LIVES

Gallup's research shows that the ultimate outcome of an education is about living a good life, which includes having a good job.[4] Many adults in the U.S. seem to be making this connection: About two-thirds (68%) agree or strongly agree that having a professional certificate or degree beyond high school is essential for getting a good job. Hispanics (84%) and blacks (76%) are more likely than whites (64%) to agree or strongly agree with this statement.

Just under three-quarters (74%) of U.S. adults agree or strongly agree that a college degree or professional certificate leads to a better quality of life. This includes roughly seven in 10 whites (71%) and eight in 10 blacks (80%) and Hispanics (83%).More than three-fourths (78%) of adults in the U.S. agree or strongly agree that a good job is essential to having a high quality of life. This includes 86% of Hispanics, 84% of blacks and 76% of whites.

	On a five-point scale, where 5 means strongly agree and 1 means strongly disagree, please indicate your level of agreement with each of the following statements.				
	%1 Strongly Disagree	**%2**	**%3**	**%4**	**%5 Strongly Agree**
Having a professional certificate or degree beyond high school is essential for getting a good job.	4	5	23	27	41
A college degree or professional certificate leads to a better quality of life.	3	5	19	31	43
A good job is essential to having a high quality of life.	3	5	14	26	52

[4] Gallup Purdue Index (2014). http://www.luminafoundation.org/files/resources/galluppurdueindex-report-2014.pdf

SOME DEGREES ARE MORE CONDUCIVE TO GETTING A GOOD JOB THAN OTHERS

When it comes to an educational experience that can lead to a good job, not all degrees, diplomas or certificates are equal in the public's eyes. Just about one in 10 (12%) strongly agree they are confident that having only a high school diploma can lead to a good job, compared with 16% for only an associate degree and 20% for only a professional certificate. Adults in the U.S. are most confident that having only a bachelor's degree (29%) can lead to a good job, with 44% of Hispanics strongly agreeing with this statement, compared with 27% of whites.

	Using a five-point scale, where 5 means strongly agree and 1 means strongly disagree, please indicate your level of agreement with each of the following statements.				
	%1 Strongly Disagree	%2	%3	%4	%5 Strongly Agree
I am confident that having only a high school diploma can lead to a good job.	32	26	23	7	12
I am confident that having only a professional certificate beyond high school can lead to a good job.	9	13	37	22	20
I am confident that having only an associate degree beyond high school can lead to a good job.	6	14	38	26	16
I am confident that having only a bachelor's degree beyond high school can lead to a good job.	4	6	20	41	29

President Barack Obama recently proposed making community college free to all Americans, saying it is a "chance to graduate ready for the new economy, without a load of debt."[5] But fewer than four in 10 (39%) adults in the U.S. agree or strongly agree that an associate degree is a well-respected degree in the U.S.

	Using a five-point scale, where 5 means strongly agree and 1 means strongly disagree, please indicate your level of agreement with each of the following statements.				
	%1 Strongly Disagree	%2	%3	%4	%5 Strongly Agree
An associate degree is a well-respected degree in the United States.	6	19	36	22	17

[5]White House (2015, Jan. 20), https://www.whitehouse.gov/the-press-office/2015/01/20/remarks-president-state-union-address-january-20-2015

SECTION 2: ATTAINMENT RATES DO NOT MATCH STRONG BELIEF IN POSTSECONDARY EDUCATION

NOT ALL WHO ASPIRE TO EARN A DEGREE ATTAIN ONE

Though there is strong agreement among U.S. adults that a postsecondary degree or certificate leads to a better job and a better quality of life, Lumina's recent report, *A Stronger Nation Through Higher Education*, reveals that less than half of Americans (40%) aged 25 to 64 have at least an associate degree[6]. Still, many who do not yet have a postsecondary degree or credential say they have taken steps toward attaining one, including one-third who say they have completed the Free Application for Federal Student Aid (FAFSA) form (35%) or have researched degree programs that award credits for prior learning (33%). Half (50%) of those without a postsecondary degree or credential say they have talked to a college adviser or recruiter, and nearly half (47%) have researched a degree program that would fit their needs. One-quarter (25%) without a postsecondary degree or credential say they have spoken with an employer's human resources staff about tuition support or reimbursement.

	Have you ever done any of the following things in order to further your education?					
	% Yes			% No		
	All	Associate Degree or Higher	Some College, No Degree or Less	All	Associate Degree or Higher	Some College, No Degree or Less
Talked to a college adviser or recruiter	63	79	50	37	21	50
Researched degree programs that would fit your needs	60	76	47	40	24	53
Completed the Free Application for Federal Student Aid (FAFSA) form	45	57	35	55	43	65
Researched degree programs that award credits for prior learning	41	50	33	59	50	67
Spoken with an employer's human resources staff about tuition support or reimbursement	36	49	25	64	51	76

Despite many Americans taking these preliminary actions to further their education, fewer enrolled in college this past year. Lumina's report revealed that U.S. postsecondary enrollment dropped by 600,000 students overall from 2013 to 2014, including a decline among black students while enrollment for Hispanics stayed flat.[7]

[6] Lumina Foundation: http://www.luminafoundation.org/files/publications/A_stronger_nation_through_higher_education-2015.pdf
[7] Lumina Foundation: http://www.luminafoundation.org/files/publications/A_stronger_nation_through_higher_education-2015.pdf

Yet, blacks, in particular, report completing most of the preliminary activities to starting college at a higher rate than the average U.S. adult. Seventy-two percent say they have spoken with a college adviser or recruiter, 72% have researched degree programs that would fit their needs, 61% have completed the FAFSA form and 55% have researched degree programs that award credits for prior learning. This shows a strong desire among blacks to obtain a college degree that belies this group's low attainment rates. Lumina finds just 28% of blacks between the ages of 25 to 64 have a postsecondary degree, compared with 44% of whites. The Hispanic attainment rate, at 20%, is even lower.[8]

REACHING OUT TO HELP OTHERS ATTAIN A DEGREE

With many in the U.S. recognizing the importance of higher education, some have taken action to encourage others to attain their degrees. One-third (33%) say they have mentored a student who was enrolled in college. More than one-third (36%) say they have given money to a college or university to support future students. Nearly half (47%) say they have given money to an organization that awards college scholarships or grants, and a majority (60%) say they have encouraged an employer to provide training or education opportunities to employees.

	Have you ever done any of the following?	
	% Yes	% No
Encouraged an employer to provide training or education opportunities to employees	60	40
Given money to an organization that awards college scholarships or grants	47	53
Given money to a college or university to support future students	36	64
Mentored a student who was enrolled in college	33	67

[8] Lumina Foundation: http://www.luminafoundation.org/files/publications/A_stronger_nation_through_higher_education-2015.pdf

SECTION 3: BARRIERS TO MAKING DEGREE ATTAINMENT A REALITY

AVAILABILITY OF EDUCATION BEYOND HIGH SCHOOL

If a college degree is essential to living the American dream, then the dream may be slipping away. Less than two-thirds (61%) of adults in the U.S. feel that education beyond high school is available to anyone in this country who needs it — a drop from 67% in 2013.[9] Higher percentages of Hispanics (73%) say that an education is available to anyone in this country who needs it, compared with whites (58%).

Do you think education beyond high school is available to anyone in this country who needs it?	
Yes	61%
No	39%

AFFORDABILITY OF EDUCATION BEYOND HIGH SCHOOL

The average tuition bill for students at a public four-year college has increased by more than 250% over the past three decades — and rising costs are likely a big reason why higher education seems out of reach for many in the U.S.[10] More than three-quarters (79%) of adults in the U.S. do not think that education beyond high school is affordable for everyone in this country who needs it, including 81% of blacks and 83% of whites. Hispanics are significantly more optimistic about the affordability of education beyond high school, with half (50%) saying yes, it is affordable to everyone in this country who needs it, compared with 17% of whites and 19% of blacks.

Do you think education beyond high school is affordable for everyone in this country who needs it?	
Yes	21%
No	79%

QUALITY AND SELECTION CRITERIA FOR HIGHER EDUCATION

When judging the quality of the country's colleges, factors most frequently cited as being very important are the faculty's qualifications (79%) and the percentage of graduates who are able to get a good job (70%). About half (49%) say the price of the college or university degree is very important to the overall quality of the institution, although Hispanics (71%) are more likely to say it is very important than whites (44%).

[9] Lumina and Gallup. (2013). "What America Needs to Know About Higher Education Redesign," http://www.gallup.com/services/176759/america-needs-know-higher-education-redesign.aspx

[10] U.S. Department of Education, http://www.ed.gov/college

	Please tell me how important each of the following factors are to the overall quality of a college or university.			
	% Not at all important	% Not very important	% Somewhat important	% Very important
The qualifications of the faculty	1	3	18	79
The percentage of graduates who are able to get a good job	1	4	25	70
The percentage of students who graduate from the college or university	1	5	35	59
The percentage of graduates who are thriving in many areas of their life	1	5	37	56
The price of the college or university degree	4	13	33	49

When selecting a college or university, adults in the U.S. are most likely to say the quality of degree programs is very important (81%). Respondents are least likely to mention the percentage of students who graduate from the college or university as very important (56%).

	Please tell me how important each of the following factors are for selecting a college or university.			
	% Not at all important	% Not very important	% Somewhat important	% Very important
The quality of college degree programs	0	1	17	82
Financial assistance for college education	1	2	18	79
The qualifications of the faculty	1	3	21	75
The percentage of graduates who are able to get a good job	1	4	23	73
The average amount of loan debt students have when they graduate from the college or university	1	4	25	70
The price of the college or university	1	5	26	68
The percentage of graduates who are thriving in many areas of their life	1	6	38	56
The percentage of students who graduate from the college or university	1	5	38	56

THE FAR-REACHING EFFECTS OF STUDENT DEBT

With postsecondary costs and student debt soaring, most cannot afford not to consider the price tag of higher education. Sixty-eight percent of adults in the U.S. say the price of the college or university is very important when selecting a college or university, and 79% say that financial assistance is a very important factor in that process. Seven in 10 (70%) say the average amount of loan debt students have when they graduate from the college or university is also very important to consider when selecting a school.

One study found that 77% of college and university admissions directors say they believe they are losing potential applicants because of apprehension about accumulating debt in college, suggesting that the prospect of potentially owing thousands of dollars in loans has become a significant barrier to postsecondary enrollment.[11] Nevertheless, 17% say that $50,000 or more is a reasonable amount of money to borrow to earn a bachelor's degree. Only 5% of adults in the U.S. think that under $5,000 of debt is reasonable, with just 5% saying that no amount of loan debt is reasonable for a bachelor's degree.

A recent Gallup-Purdue Index study[12] found that about one-fifth of recent black college graduates with a bachelor's degree (22%) report leaving school with no loans — almost half the rate among white college graduates (39%). Nearly three in 10 recent black college graduates (28%) and the same percentage of whites say they borrowed up to $25,000. Overall, 35% of 2000-2014 U.S. college graduates report graduating with more than $25,000 in student debt, in inflation-adjusted dollars.

Many adults in the U.S. think that these figures are reasonable for students who graduate with a bachelor's degree. More than half (62%) say that $20,000 or more in debt is reasonable, and 40% say that $30,000 or more in debt is reasonable for attaining a bachelor's degree.

Suppose someone had to take out some student loans in order to attend college. What do you think is a reasonable amount of loan debt for someone to have if they graduate with a bachelor's degree?	
No amount of loan debt is reasonable.	5%
Under $5,000	5%
$5,000 to less than $10,000	9%
$10,000 to less than $20,000	19%
$20,000 to less than $30,000	22%
$30,000 to less than $40,000	12%
$40,000 to less than $50,000	11%
$50,000 or more	17%

AMOUNT OF REASONABLE DEBT FOR ASSOCIATE DEGREE

The amount of debt individuals find reasonable for graduates with an associate degree is lower than that for graduates with a bachelor's degree. The majority (74%) say less than $20,000 is a reasonable amount of loan debt for an associate degree, compared with 38% who say the same about a bachelor's degree. More than four in 10 (46%) say less than $10,000 in loan debt is a reasonable amount of debt to accumulate for an associate degree. Twenty-five percent say it is reasonable to obtain an associate degree with under $5,000 in debt or no loan debt.

[11] Jaschik, S. (2014, Sept. 18), Inside Higher Ed Survey of College and University Admissions Directors, https://www.insidehighered.com/news/survey/more-pressure-ever-2014-survey-college-and-university-admissions-directors

[12] Black College Grads More Likely to Graduate With Debt, Gallup-Purdue Index, Feb. 4-March 7, 2014 http://www.gallup.com/poll/176051/black-college-graduates-likely-graduate-debt.aspx

What do you think is a reasonable amount of loan debt for someone to have if they graduate with an associate degree?	
No amount of loan debt is reasonable.	10%
Under $5,000	15%
$5,000 to less than $10,000	21%
$10,000 to less than $20,000	28%
$20,000 to less than $30,000	16%
$30,000 to less than $40,000	4%
$40,000 to less than $50,000	3%
$50,000 or more	4%

AMOUNT OF REASONABLE DEBT FOR NO DEGREE

For students who attend college but do not obtain a degree, the majority of U.S. adults (60%) say less than $10,000 in loan debt is a reasonable amount. One in five (20%) say no amount of loan debt is reasonable under this circumstance. Hispanics (16%) are three times as likely as whites (4%) to say it's reasonable to accumulate more than $40,000 in debt and not graduate.

What do you think is a reasonable amount of loan debt for someone to have if they take classes for several years at a college or university but do not graduate with a degree?	
No amount of loan debt is reasonable.	20%
Under $5,000	20%
$5,000 to less than $10,000	20%
$10,000 to less than $20,000	20%
$20,000 to less than $30,000	10%
$30,000 to less than $40,000	4%
$40,000 to less than $50,000	3%
$50,000 or more	3%

Despite the cost and the risk of taking on debt, adults in the U.S. seem to feel that some college is better than no college. Two-thirds of respondents agree or strongly agree that taking some college courses is a good idea even if one does not get a degree.

	Using a five-point scale, where 5 means strongly agree and 1 means strongly disagree, please indicate your level of agreement with each of the following statements.				
	%1 Strongly Disagree	%2	%3	%4	%5 Strongly Agree
Taking some college classes is a good idea even if you do not get a degree.	7	7	21	27	39

SECTION 4: CHANGING WORKPLACE DEMANDS REQUIRE EXAMINATION OF HIGHER EDUCATION STRUCTURE

NOT MANY FEEL A COLLEGE DEGREE PREPARES GRADUATES FOR WORKPLACE SUCCESS

A recent study of business and nonprofit leaders found that most employers felt recent graduates fell short in nearly all of 17 important outcome areas, including critical thinking and analytical reasoning, complex problem solving and ethical judgment and decision making — skills essential to excelling at work.[13] Most U.S. adults share these sentiments: Just 13% strongly agree that U.S. college graduates are well-prepared for success in the workforce. The percentage of those with an associate degree or higher who strongly agree with this statement is even lower, at 6%. On the other hand, blacks and Hispanics are more optimistic, with 53% and 55%, respectively, agreeing or strongly agreeing that graduates are well-prepared, compared with 30% of whites.

About three-quarters of U.S. adults (73%) agree or strongly agree that employers value the knowledge and skills students obtain through the process of earning a college degree, including 70% of blacks and 73% each of whites and Hispanics.

	Using a five-point scale, where 5 means strongly agree and 1 means strongly disagree, please indicate your level of agreement with each of the following statements.				
	%1 Strongly Disagree	**%2**	**%3**	**%4**	**%5 Strongly Agree**
College graduates in this country are well-prepared for success in the workforce.	7	17	40	23	13
Employers value the knowledge and skills obtained through the process of earning a college degree.	2	6	20	36	37

When it comes to the factors organizations prioritize in deciding whom to hire, a strong majority of U.S. adults (81%) say that the job candidate's knowledge and skills in the field is very important. Far fewer say the job candidate's university major (47%) or the institution (31%) he or she graduated from are very important factors in the decision.

Hispanics are significantly more likely (74%) than whites (42%) to say that a candidate's major in college is very important to employers in the hiring process. More than twice as many Hispanics (54%) as whites (26%) say the college or university that a job candidate graduated from is very important to employers when deciding whom to hire.

[13] Associate of American Colleges and Universities. (2015, Jan. 20), https://www.aacu.org/press/press-releases/2015employerstudentsurveys

	Please tell me how important you think each of the following factors are to organizations when they decide whom to hire.			
	% Not at all important	% Not very important	% Somewhat important	% Very important
The job candidate's knowledge and skills in the field	0	1	18	81
The job candidate's college or university major	1	5	47	47
The college or university that the job candidate graduated from	3	14	52	31

INSTITUTIONS NEED TO CHANGE

Today's college students do not always fit the traditional mold: For instance, many are older, more racially diverse, more likely to live off campus and more likely to have jobs and families of their own than their conventional counterparts.[14] Eight in 10 (80%) U.S. adults agree or strongly agree that colleges and universities need to change to better meet the needs of today's students. Overall, about four in 10 (42%) U.S. adults agree or strongly agree that colleges and universities are changing to better meet students' needs. Hispanics and blacks are more optimistic that this is happening, with 56% and 55%, respectively, agreeing or strongly agreeing, compared with 38% of whites.

	Using a five-point scale, where 5 means strongly agree and 1 means strongly disagree, please indicate your level of agreement with each of the following statements.				
	%1 Strongly Disagree	%2	%3	%4	%5 Strongly Agree
Colleges and universities need to change to better meet the needs of today's students.	2	3	15	25	55
Colleges and universities are changing to better meet the needs of today's students.	7	13	37	26	16

INSTITUTIONS AND PRIORITIES

When asked to weigh different factors that colleges and universities might prioritize, nearly three-quarters of U.S. adults (72%) say teaching students skills and knowledge that can be applied in the workforce is very important to these institutions, followed by increasing the graduation rate (69%) and providing support and services so that students can succeed in college (68%). A little more than half of those surveyed (54%) say that they believe it is very important to colleges and universities to have a diverse student population.

[14] Pelletier. (2010). Success for Adult Students.
http://www.aascu.org/uploadedFiles/AASCU/Content/Root/MediaAndPublications/PublicPurposeMagazines/Issue/10fall_adultstudents.pdf

	How important do you think each of the following factors are to colleges and universities?			
	% Not at all important	% Not very important	% Somewhat important	% Very important
Teaching students skills and knowledge that can be applied in the workforce	1	5	23	72
Increasing the graduation rate	2	5	25	69
Providing support and services so that students can be successful in college	1	4	28	68
Having alumni who can donate back to the school	2	4	31	64
Getting top students to attend	1	4	33	61
Having a diverse student population	3	8	35	54

When asked which of the factors they thought colleges and universities value most, 35% say teaching students skills and knowledge that can be applied in the workforce. Approximately one in five (21%) say having alumni who can donate back to the school is most important to institutions, and those with an associate degree or higher are significantly more likely to say this (26%) than those with no degree (16%). Individuals are least likely to say institutions value having a diverse student population the most (5%).

Which of these factors would you say colleges and universities value most?	
Teaching students skills and knowledge that can be applied in the workforce	35%
Having alumni who can donate back to the school	21%
Helping students succeed	14%
Getting top students to attend	13%
Increasing the graduation rate	12%
Having a diverse student population	5%

CHANGING THE PARADIGM

While about half of U.S. adults (51%) say that most of the time they subscribe to the traditional view of the college experience as a campus where students live and attend classes toward a four-year degree, some are expanding their perspective of what attaining a college degree can look like.

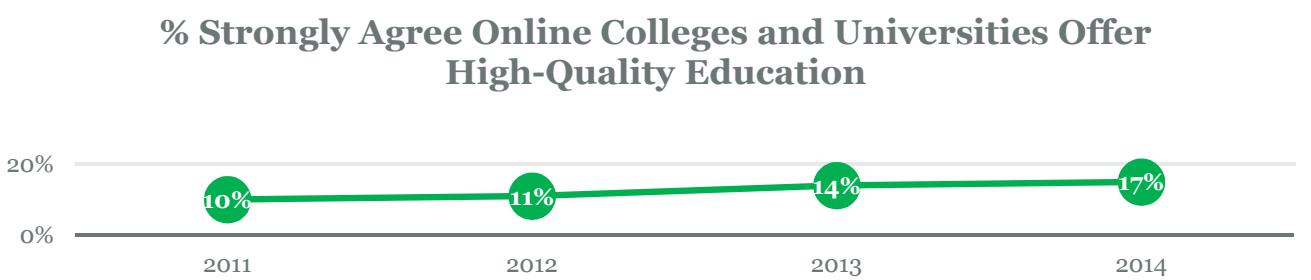
Approximately four in 10 (41%) say that their description of how they think of college most of the time includes students earning a professional certificate to use in their workplace. Three in 10 (30%) think of students working to earn a two-year associate degree and two in 10 (20%) think of an online learning environment where students log into classes most of time when they think about college.

	Please tell me whether each of these describe how you think of college. Do you perceive college as ...?		
	% Most of the time	% Some of the time	% Never
A campus where students live and attend classes with the goal of getting a four-year degree	51	34	15
Students working to earn a professional certificate to use in their workplace	41	41	18
Students working to earn a two-year associate degree	31	48	21
An online learning environment where students log in to classes	20	53	27

PERCEPTIONS OF QUALITY IN HIGHER EDUCATION

Though ideas about what constitutes a college education are evolving, individuals still believe the conventional model of higher education offers the most quality. About three-quarters (74%) agree or strongly agree that traditional colleges and universities offer a high-quality education. In contrast, about six in 10 (61%) agree or strongly agree that community colleges offer a high-quality education, and about four in 10 (41%) agree or strongly agree that online colleges offer a high-quality education.

Online education continues to lag behind traditional institutions in quality perceptions. Gallup recently reported that "Americans tend to think it provides less rigorous testing and grading, less qualified instructors, and has less credence with employers compared with traditional, classroom-based education."[15] Yet, there is some indication that the cool reception toward online colleges is gradually thawing. In a 2011 Gallup-Lumina poll on higher education[16], 10% strongly agreed that online colleges and universities offer a high-quality education, compared to 17% in 2014.



[15] Gallup. (2013, Oct. 15) "In, U.S., Online Education Rated Best for Value and Options," http://www.gallup.com/poll/165425/online-education-rated-best-value-options.aspx

[16] Lumina Foundation/Gallup Poll 2011,http://www.gallup.com/poll/151844/Lumina-Foundation-Gallup-Poll-2011.aspx and What America Needs to Know About Higher Education Redesign, http://www.gallup.com/services/176759/america-needs-know-higher-education-redesign.aspx

	Using a five-point scale, where 5 means strongly agree and 1 means strongly disagree, please indicate your level of agreement with each of the following statements.				
	%1 Strongly Disagree	%2	%3	%4	%5 Strongly Agree
Traditional colleges and universities offer high-quality education.	1	3	22	41	33
Community colleges offer high-quality education.	3	6	30	35	26
Online colleges and universities offer high-quality education.	7	15	37	24	17

When asked if the quality of education from an online college or university is just as good as the education received at a traditional college or university, 39% agree or strongly agree. Half of Hispanics (52%) agree or strongly agree with this statement, compared with 36% of whites. This finding suggests relatively strong support of online higher education among Hispanics.

	Using a five-point scale, where 5 means strongly agree and 1 means strongly disagree, please indicate your level of agreement with each of the following statements.				
	%1 Strongly Disagree	%2	%3	%4	%5 Strongly Agree
The quality of education at an online college or university is just as good as the education received at a traditional college or university.	12	20	29	24	15

SUMMARY

The majority of adults in the U.S. continue to recognize the importance of having a certificate or degree beyond high school. Most see the connection between having a college degree and having a good job, and they relate having a good job with having a higher quality of life. They tend to place the most credence in traditional four-year colleges and universities to offer the highest quality education, and they are most confident that a bachelor's degree — as opposed to a high school education, professional certificate or an associate degree — will lead to a good job.

Many are broadening their acceptance of non-traditional higher education, including community colleges, professional certificates and online education, although they still feel a four-year degree offers students a better opportunity at attaining a good job. Still, many recognize that the high cost of postsecondary education is a barrier for students and that heavy loan debt can hinder graduates on the path to a better life. This could be spurring some Americans to view alternative, less traditional forms of postsecondary education as a viable alternative.

As workplaces evolve to compete with the demands of a global economy, most U.S. adults are not convinced that colleges are preparing students for job success. The majority feel the higher education system needs to change to better meet the needs of today's students, yet less than half believe that colleges and universities are doing so. In particular, institutions could do more to meet the needs of black and Hispanic students, whose degree attainment rates continue to fall short of the national average. While many have taken steps to research different higher education institutions and explore financial aid options available to them, most do not believe a postsecondary education is affordable to everyone.

METHODOLOGY

This paper includes results from a survey conducted by Gallup on behalf of Lumina Foundation. The study reported includes findings from a quantitative survey conducted to understand the perceptions of adults currently living in the U.S. about several important issues pertaining to higher education, including degree attainment, quality and value, costs, information access and workforce preparedness. Gallup conducted 1,533 interviews from a random sample of individuals using a dual-frame design, which includes both landline and cellphone numbers. Gallup samples landline and cellphone numbers using random-digit-dial methods.

Gallup conducted surveys in English and Spanish from Nov. 3 to Dec. 18, 2014. Multiple calls were made to each household to reach the eligible respondent.

Gallup weighted the sample to correct for unequal selection probability, nonresponse, and double coverage of landline and cellphone users in the two sampling frames. Gallup also weights the final samples to match the U.S. population according to gender, age, race, Hispanic ethnicity, education, region, population density and phone status (cellphone only, landline only, both and cellphone mostly). Demographic weighting targets are based on the most recent Current Population Survey figures for the aged 18 and older U.S. population. Phone status targets are based on the most recent National Health Interview Survey. Population density targets are based on the most recent U.S. Census.

The questionnaire was developed in consultation with representatives from Lumina Foundation and Gallup. All interviewing was supervised and conducted by Gallup's interviewing staff. For results based on the total sample size of 1,533 adults, one can say with 95% confidence that the margin of error attributable to sampling and other random effects is ±3.3 percentage points. For subgroups within this population (e.g., education level, gender, race/ethnicity and income), the margin of error would be greater.

New Pathways to Careers and College

Examples, Evidence, and Prospects

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April 2015

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Overview

The debate about high school reform is increasingly focused on the role of career-technical education (CTE) in helping to prepare *all* students for success in *both* postsecondary education and the workforce. The stand-alone vocational courses into which high school students with lower academic achievement were often channeled are becoming a thing of the past. Instead, programs that merge CTE, rigorous academic coursework, and career exploration opportunities, while creating clear pathways through high school, college, and beyond, are gaining momentum. This report describes some of the most prominent of these "pathway" models, identifies localities where the approach has gained the most traction, discusses the underlying principles that characterize the most promising programs, and briefly presents the evidence of their potential to make a difference. The report concludes with a set of recommendations for future investment to strengthen and scale such programs.

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Introduction

> Career technical education must reposition itself not just as a vocational alternative to college prep but as a pathway into postsecondary programs that links degrees and credentials to occupations.[1]

The national discourse on high school reform is increasingly focused on the role of career and technical education in preparing *all* students for success in both postsecondary education and the workforce. High schools are moving away from the stand-alone vocational courses of the past, into which students with lower academic achievement or perceived potential were often channeled. Many educators are now calling for approaches that link career-technical education, rigorous academic coursework, and experiences that show students the relevance of education to their future, while teaching them the academic and employability skills they need to be successful in both college and career. Across the nation, schools, districts, cities, and states are launching or scaling these new programs. Yet many initiatives are struggling to gain traction and expand, due in part to inadequate resources and in part to a shortage of rigorous evidence of their efficacy.

In this report the term "college and career pathways" — or "pathways" for short — is used to refer to a range of models or approaches that attempt to create a clear path for students to follow to attain an educational and occupational goal, while learning the skills — sometimes called twenty-first century skills or transferable skills — they need to succeed in both domains. This report focuses on pathway programs that begin in high schools and sometimes extend beyond, to postsecondary education or training.

The report begins with a short history of how pathways evolved from the relatively narrow occupational courses that dominated vocational education in high schools throughout most of the twentieth century to the more comprehensive models of today. Next, it describes the models and approaches identified in a recent scan of the field, noting the various principles, locations, and prevalence and any intermediaries that support them. The next section lists the core design principles of models and approaches that many believe to be the key ingredients of the most promising programs. Following this is a brief discussion of the efficacy of a subset of these programs for which rigorous evidence exists. The report concludes with a section addressing the factors or conditions that would enable the strengthening and expansion of pathways at the local level.

The goal of career and college preparation for *all* students has been widely accepted, and several promising models have provided good evidence that this goal is attainable. But

[1] Independent Advisory Panel of the National Assessment of Career and Technical Education (2014), p. ES-2.

these models have not yet been implemented on a large enough scale to accomplish the systemic, sustainable change that would achieve the goal. Implementing these models requires resources, planning, and commitment. At present, the recent National Assessment of Career and Technical Education finds that students who take a sequence of related career-technical classes in high school are still more likely to come from families with lower income and less educated parents; these students are less likely to take advanced math courses in high school and are less likely to enter or complete a postsecondary educational program.[2] Disrupting this pattern, inherited from the twentieth century, is a challenge many educators and employers are now trying to meet.

Origins of College and Career Pathways

During most of the twentieth century, high schools were designed to prepare some students for college and other students for work. That has changed. Now the most commonly stated goal of high school is to prepare students for both college *and* careers — in fact, this is the tag line on the logo for the Common Core State Standards. Two related developments reflect this change. One is the progression from vocational education to career-technical education. The other is the recent attempt in some cities and states to build systems of college and career pathways, combining career-technical with college-prep curriculum.

In the 1980s, what was then called vocational education (VE) started evolving into what is now called career and technical (or career-technical) education (CTE). VE courses were explicitly intended to prepare high school students for direct entry into full-time work — *not* for college or university. In contrast, CTE courses are meant to fit together with classes in academic subjects so that high school students are prepared for *both* work and postsecondary education.

The change from VE to CTE is apparent in federal legislation. As recently as 1998, the federal law authorizing funds for VE continued to define it as preparation for careers "other than careers requiring a baccalaureate, master's, or doctoral degree." But the 2006 reauthorization, which replaced the term "vocational" with "career and technical," finally eliminated the prohibition against using the federal funds to prepare students for careers that require a bachelor's or advanced degree. And in 2014 the federal agency that oversees this funding changed its name from the Office of Vocational and Adult Education to the Office of Career, Technical, and Adult Education.

Patterns of course-taking by high school students show a dramatic shift away from VE as a separate, noncollege track. Among high school graduates who completed an occupational

[2]U.S. Department of Education (2014). A thorough description of trends in CTE participation was provided by a commissioned background paper (Dalton et al. 2013).

course sequence, the number who also completed the academic coursework expected for college jumped from 28 percent in 1982 to 88 percent in 2000.[3] Thus almost all students who take an occupational course sequence are now also completing the academic core curriculum — although, as noted earlier, CTE concentrators are still less likely to take advanced math courses in high school, or to enter or complete college.

The change from VE to CTE was prompted by new demands from employers. Historically the main advocates of federal funding for VE, employers in the 1980s began to express concern that entry-level job training in high school was not sufficient to prepare employees for increasingly rapid change in technology, products, and the organization of work.[4]

Traditional VE, as a track for students who were not deemed college-bound, also had been consistently criticized for enrolling disproportionate numbers of low-income and minority students, and limiting their options.[5]

Several high school reform efforts promoted the movement from VE to CTE. One of the most important was High Schools That Work, launched in 1987 by the Southern Regional Education Board. Career academies, which began in Philadelphia in 1969 and were replicated during the 1980s in California and New York City, also embody the CTE approach by fitting an occupational course sequence together with the academic coursework expected for college. These and more recent examples of college and career pathway models are described in the next section.

As the idea of preparing students for both careers and college has become more popular, some cities and states have begun to develop systems of career-themed pathways that enroll large proportions of high school students. The 1994 School-to-Work Opportunities Act provided federal funding to build such systems, but this effort was strongly opposed in some places as unwarranted federal intrusion, and the legislation lapsed in 1999. More recent attempts to build college and career pathways on a larger scale have been initiated by states or localities. Prominent examples are the Linked Learning District Initiative in California, described in later sections of this report, and P-Tech in New York.

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[3]National Center for Education Statistics (2008). Students are defined as vocational concentrators if they earned at least 3 credits in a single specific labor market preparation field but had fewer than 12 credits in the core academic course areas of English, social studies, mathematics, and science.

[4]See, for example, National Academy of Sciences (1984) and Kearns (1988). David T. Kearns was the CEO of Xerox Corporation from 1982 to 1990 and became deputy secretary of education from 1991 to 1993 under President George H. W. Bush.

[5]For example, see Oakes (1985).

A Scan of Pathway Approaches and Programs in the United States

Pathway approaches and programs have grown considerably across the country, especially in the last ten years, but to our knowledge no scan of these programs has been done for some time. We began the task of identifying college and career pathway programs by listing all those that we were personally aware of and expanded the list by reviewing recent literature and online information. We then asked ten experts for further suggestions. Appendix Table A.1 gives the programs, their main components, their locations, and their supporting organizations. Appendix B provides the list of experts we consulted.

Each of the programs and approaches shown in Appendix Table A.1 meets the following broadly defined criteria:

- Serves high school students
- Includes a career-technical education component (courses, occupational training)
- Pays attention to preparation of students for success in *both* college and career
- Targets all students regardless of their prior academic achievement
- Has existed for at least a few years

The scan resulted in identifying two general types of programs that meet most or all of the criteria outlined above. The first type are *systemic* approaches, which are often state driven, reaching relatively large numbers of students. They encompass multiple partners (such as employers and colleges) and are designed to achieve broad, fundamental, and sustainable changes in how students are prepared for college and career. These approaches tend to be less prescriptive and more flexible. States, districts, and schools are usually given significant autonomy in deciding on which programs and services to incorporate, as long as they adhere to the key principles in the approach. These systemic approaches often include a variety of specific models. Linked Learning districts, for example, are systems of pathways from ninth grade through community college; California Partnership Academies are one of the models found within these districts. The second type are *discrete* models or programs, typically school based. These include small learning communities within schools, such as career academies, or whole schools, such as High Schools That Work. We identified four initiatives in the first category (Linked Learning, Pathways to Prosperity, Youth CareerConnect, and dual enrollment with a CTE focus) and eight in the second (career academies, High Schools That Work, New York City small schools of choice with a career focus, early college high schools with a CTE focus,

apprenticeships, transformed vocational high schools, the New Tech Network, and International Baccalaureate programs with a career exploration component).

Core Principles of the Most Promising Pathway Programs

Several common principles characterize the most promising of the pathway programs described in the previous section and in Appendix Table A.1. Below, we describe these principles and discuss some of the challenges experienced by schools and communities when they try to implement programs incorporating them.

Pathways keep students' options open. High schools face a fundamental dilemma. The great majority of high school students want to attain a bachelor's or advanced degree — because many high school students and their parents know that such degrees provide access to managerial and professional jobs with higher salaries, attractive working conditions, and greater employment security — but in fact only about one in three will complete a bachelor's degree.[6] If high schools try to prepare all students only for four-year colleges and universities, many young people will finish their schooling without any technical knowledge or skill to earn a living.[7] But if high schools provide college preparation only for students who, around age 14, are deemed likely to succeed in postsecondary education, they will mistakenly shortchange many talented young people, including disproportionate numbers of those from low-income families, racial or linguistic minorities, or recent immigrants — an injustice to those students and a loss to the nation.

Preparing high school students for *both* employment and postsecondary education is an obvious logical response to this dilemma. Pathways make college-prep academic coursework available to all students, and some provide access to college courses while students are still in high school. Pathways also offer a rigorous sequence of career-technical coursework to prepare students for direct entry into the workforce after high school or after they finish a college degree. Some pathways provide access to industry-recognized credentials, which help young people earn higher wages whether they enter full-time employment immediately after high school or work part-time while in college. And if students decide to enter a field different from the pathway they started in high school, the transferable skills they have learned, such as critical thinking and teamwork, will benefit them no matter what career they end up in. Keeping

[6]Educational expectations of high school students were reported in U.S. Department of Education (2011). Degree completion rates by age group are reported in National Center for Education Statistics (2014).

[7]Part-time employment while in high school traditionally enabled some students to learn work skills, apart from any career-technical courses. However, the percentage of high school students with part-time jobs fell sharply in the past decade.

students' options open is a consistently expressed goal of the new CTE approach and of the more complex models that include CTE as one component.

The choice of which pathway is up to the student (and parents). Because college and career pathways are designed to keep students' options open, they may be appropriate and beneficial for any student who chooses to enroll. Pathways are not generally intended only for high-achieving students or only for low-achieving students. Ideally every pathway would enroll a fairly representative cross section of students from the school or district.

Allowing students — and teachers — to participate by choice is relatively easy when a large high school contains only one or two pathway programs. But when a school or district policy requires all or most students and teachers to enroll in pathways, allowing completely free choice becomes more difficult. Some high school students, families, and teachers simply do not want to participate in a career-themed program of study. Even if they are given a choice about which pathway to join, they will not have the same level of interest, commitment, or motivation as students or teachers who really want a career-themed pathway. This implies that the benefits of career and college pathways may be greatest when not all students and teachers are required to participate.

There also may be a trade-off between choice and open access. Some pathways may attract certain types of students. For instance, pathways focused on fashion design, child development, or health care tend to enroll more girls, while construction, engineering, and manufacturing enroll more boys. The undesired consequence is that some boys who could excel in health care, or girls with a talent for engineering, would not choose those pathways because they don't want to seem "weird."

Ethical, political, and legal issues can arise, especially when enrollment patterns are associated with race, language, family income, or prior achievement. If students who choose the engineering pathway are mainly Asian, and those who choose a construction pathway are mainly Latino — or vice versa — the school or district would be under some obligation to disrupt that pattern, by concerted outreach or perhaps using a lottery to assign some students to pathways.

Personal support for students. Some pathways are organized as small learning communities that are somewhat separate from the larger high school. For example, most career academies are small groupings of students within larger high schools, typically numbering 150 to 300 students in grades 9-12 or 10-12.

Students receive more personal academic and social support in this situation because a small team of teachers shares responsibility for the same cohort of students over a period of three or four years. Ideally, teachers are scheduled to have common planning time, to coordinate

their curriculum and also to exchange information about students. Academy teachers come to know their students well and are therefore more able to provide individual support. As one career academy teacher remarked, "When you have students for a year, they're on your mind. When you have them for three years, they're on your conscience."[8]

In career academies and some other pathways, students are scheduled to take some classes together as a cohort, and ideally those classes enroll only academy students. Usually the academy classes each year include one career-technical class along with one to three classes in academic subjects. Cohorting is a strategy used in many school reform efforts. It is especially useful in the context of pathways because it facilitates implementation of other key components in the model, including integration of career-technical coursework with academic coursework and work-based learning. Cohort scheduling allows teachers to develop cross-disciplinary projects, lessons, and assignments that integrate academic and technical content, making the academic subjects more interesting for students and creating coherence in the curriculum. Students who take several classes together also can develop a positive group identity and give one another academic and social support. It can be surprisingly difficult to schedule a cohort of students to take all or even most of their classes together each year, and in the right sequence from one year to the next. Scheduling a common planning period for pathway teachers adds to the challenge. A typical example of this challenge is when a high school offers only one section of a particular course, such as Advanced Placement Physics. That course typically would not be part of the shared sequence for a pathway focusing on Business and Finance, for instance, but if one or more students in that pathway wanted to take AP Physics it would have to be offered at a time when none of the required pathway courses was being held. Since a high school could easily have 10 or 20 "singleton" course sections, including various advanced courses and other electives, avoiding conflicts can become impossible. Schools then have to set priorities. Ideally, this is managed through a year-round process that includes all stakeholders.[9]

Integrated curriculum. The standard high school curriculum consists of "units" of instructional time. To receive a diploma, a student must complete a minimum number of units in particular subjects, as specified by the state and local school authorities. To keep track of students' units, the school day is divided into periods, each period identified with a particular subject. Students proceed through the school day taking one subject after another — first period biology, second period Spanish, third period math, or whatever — with no connection between subjects. Not surprisingly, this approach to learning often fails to engage students' interest and also inhibits certain instructional strategies such as project-based learning.

[8]Reported to David Stern by Marilyn Raby, who was the teacher's supervisor.

[9]For tools and procedures for scheduling high schools with pathways, see College & Career Academy Support Network (2015a).

Scheduling a cohort of students to take several classes together each year can help overcome the artificial separation of subjects. In a health pathway, for example, teachers who instruct the same group of students in health occupations, biology, and social studies classes can integrate those subjects in a project dealing with a topic such as communicable disease and public health policy. Math teachers who have a cohort of pathway students in one of their classes can easily find connections with CTE teachers in construction, engineering, agriculture, business and finance, and other fields. Interdisciplinary lessons or projects can bring academic subjects to life, and help students see the relevance of school subjects to the world beyond high school. Teachers in career academies have been using this kind of integrated curriculum for decades.[10]

Creating and delivering integrated curricula is not easy. Teachers rarely have the time or the skills to develop units and need training and ongoing support to do this successfully. While integrated curricula and professional development are becoming more available through organizations such as ConnectEd and the Buck Institute, there is still much work to be done to ensure that teachers have the skills and knowledge they need to teach interdisciplinary content.

Real applications. Pathways often engage students in projects that have real value and relevance outside the classroom. Students build houses for sale, run restaurants or retail stores, conduct health clinics, operate child care centers, design websites for nonprofit or government agencies, compile data and reports on local environmental conditions, fix cars, produce public service announcements, or cultivate crops and raise livestock, among many other productive activities. In contrast to most class assignments, which are read and evaluated only by the teacher, these projects have clients or customers outside the classroom and are evaluated by the standards of adult professional work. Learning through actual productive activity was one of the strengths of traditional vocational education. Contemporary CTE continues that tradition, and in integrated pathways connects these activities to academic subjects as well.

The integrated, applied teaching and learning in college and career pathways requires more planning and coordination than the standard curriculum, which mainly leaves individual teachers to organize their own work. If an integrated curriculum with real applications were easy to do, it would probably be standard practice. But there is reason to expect that these complex teaching and learning practices will become more widespread. The Common Core State Standards, which emphasize application of knowledge and synthesis of information, provide an incentive for high schools to overcome the inertia of the standard curriculum.

[10]For a searchable database with examples of integrated curricula, see College & Career Academy Support Network (2015b).

Employer partnerships and work-based learning. Collaboration with employers and other community partners further reinforces the connection for students between high school and the world beyond. Employers play an important part in pathway programs, as curriculum advisors, mentors for students, and sponsors for work-based learning. They often offer a sequence of work-based learning experience, from classroom presentations by employers that promote career awareness, to career exploration through workplace visits and job shadowing, and on to actual career preparation in school-based enterprises and outside internships. Pathways provide work-based learning related to a particular theme, further reinforcing for students the value of what they are studying in school.

Quality career exploration and work-based learning experiences in which all students can participate are difficult to implement at scale. Teachers typically lack the skills and experience to recruit and collaborate with local employers and the time to do the considerable legwork to make this happen. Intermediaries that work to connect schools with employers, create and monitor internships, and handle logistics and compensation are often the solution. Tools and teaching materials are becoming increasingly available as well, such as a curriculum developed by MDRC called Exploring College and Career Options, now used by ConnectEd in the Linked Learning initiative.

Collaboration between high schools and postsecondary education. To create clear paths from high school to and through college, and help students take some steps along that path, career and college pathway programs have developed closer collaborations with local postsecondary institutions. These include providing better information to students about college requirements and possible courses of study; regularly reviewing students' transcripts to make sure they are on track to complete college requirements; organizing campus visits where high school students can see programs related to the theme of their pathway; helping students fill out applications for college admission and financial aid; creating articulation agreements so that some courses in high school can count for college credit; and enabling dual enrollment so that students start building a college transcript while still in high school. Just as teachers need training and support to teach effectively in these settings, counselors need training in how to provide more effective advice and tools to students as they choose and then follow a pathway program, especially when the pathway leads to and through college. Some pathway models include dedicated counselors, who work solely with pathway students.

District support. As the number of college and career pathways has increased, districts have become more involved, and for some approaches drive the process. The district role

includes selecting pathways that are tied to growing sectors in the local economy;[11] communicating to parents and the community what college and career pathways are all about; coaching and other assistance to pathway lead teachers, counselors, and other school site leaders; updating the curriculum and aligning it with new standards; ensuring that the evaluation of principals includes how well they manage the complexity of pathway implementation; helping to recruit and organize employer partners; and handling logistical issues around work-based learning.

High standards, accountability systems, and data-driven decision-making. As pathway models are replicated, it is important to ensure that new sites provide all the key elements, so that a program that calls itself a career academy or Linked Learning pathway is really offering the experience intended by the National Career Academy Coalition (NCAC), National Academy Foundation (NAF), and Linked Learning. These organizations have to a great extent aligned their standards to guide implementation and ensure quality. The NAF standards also include measures of students' performance in NAF courses and internships. The existence of these standards demonstrates that it is possible to define and monitor quality. However, the fact that the number of certified pathway programs nationwide still is under a thousand demonstrates how far there is to go to achieve large-scale implementation.

So far, pathway certification has been entirely voluntary, with no governmental rewards or sanctions attached. As states continue to modify their accountability procedures to take into consideration high school graduates' readiness for college and careers, students' successful completion of a certified career and college pathway can be used as an accountability measure. This is a topic of active discussion in California. Along with standards, data systems that are both accessible and sophisticated are needed to continuously measure progress in achieving key milestones in pathway development and student outcomes.

Strong intermediaries to support programs. Some career and college pathway models are supported by intermediary organizations. Some of these are national, such as NAF and NCAC. Others are local, such as Philadelphia Academies Inc. and Academies of Nashville. ConnectEd California, the intermediary that has pioneered the development of Linked Learning, has worked mainly in California but is now becoming national. The role of such intermediaries includes establishing standards and certification procedures, providing professional development and technical assistance, creating curricula, and providing operational tools, including web-based platforms.

[11]There is some debate in the field about the extent to which programs should be tied to growing sectors. Long-run trends are difficult to predict, suggesting that it is better to equip students to be flexible, enabling them to respond to changing market conditions, rather than prepare for specific fields.

The Evidence

Despite the array of programs now operating in many cities and states, surprisingly little is known about the effectiveness of most of these in making a real difference in the lives of students who participate in them. Most research on these programs lacks the rigor needed to attribute with confidence any improvement in outcomes to the program itself, rather than to the characteristics of students who choose to enroll. There are a few notable exceptions to this pattern.

MDRC's oft-cited study of **Career Academies**, launched in the mid-1990s, used a randomized controlled trial (RCT) to study the impacts of the program on outcomes for approximately 1,500 students beginning in ninth grade and extending for eight years after their scheduled high school graduation dates.[12] The career academies produced sustained earnings gains that averaged 11 percent (or $2,088) more per year for academy group members compared with individuals in the non-academy group — a $16,704 boost in total earnings over the eight years of post-high school follow-up (in 2006 dollars). The labor market impacts were concentrated among young men, a group that has experienced a severe decline in real earnings in recent years. Through a combination of higher wages, hours worked, and employment stability, real earnings for young men in the academy group were higher by $3,731 (17 percent) per year — or nearly $30,000 over eight years — compared with the control group.

There were no positive or negative impacts for the total sample on educational outcomes, such as graduation (although there was increased high school graduation by males of color, compared with their control group counterparts) or college enrollment. In other words, the earnings gains came about without adversely affecting educational attainment. More than 90 percent of both the academy group and the control group graduated from high school or received a GED certificate, and half completed a postsecondary credential. This was the earliest rigorous evaluation of a pathway program conducted and is still often referenced in discourse about pathways.

A more recent study conducted by the College & Career Academy Support Network (CCASN) at the University of California, Berkeley, compared outcomes for students enrolled in **California Partnership Academies** (CPAs) with statewide outcomes for all public high schools.[13] They found that 95 percent of academy seniors in 2009-2010 graduated at the end of the school year, compared with 85 percent of all California public high school seniors. Among academy graduates, 57 percent reportedly completed the full set of courses required for admission to California State University or the University of California, compared with only 36

[12]Kemple (2008).
[13]Dayton, Hester, and Stern (2011).

percent of graduates statewide. This last result emphasizes that career-themed pathways can in fact give students the option of attending college. Moreover, the law governing CPAs requires that at least half the students entering an academy in tenth grade must meet specified "at risk" criteria, including having low family income, low grades and test scores, and a record of poor attendance — and a subsequent CCASN study confirmed that academy tenth and eleventh graders generally do come from families with lower income and lower parental education, compared with nonacademy students in the same high schools.[14] Because it was not a random assignment study, however, the positive outcomes for CPA seniors are likely attributable at least in part to unmeasured characteristics of students such as motivation, persistence, or interest.[15]

SRI has recently released two reports with findings from a study of Linked Learning, from Year 4 and Year 5 respectively.[16] This study found that students in certified Linked Learning pathways outperformed similar students in the same districts on credit accumulation and satisfying university admission requirements. Students in certified Linked Learning pathways were also more likely to report feeling engaged in and motivated by their school work. Effects on high school graduation or postsecondary enrollment rates will not be known until 2016.

A longitudinal study examined the impact of **Programs of Study** — a type of career pathway promoted by the Office of Vocational and Adult Education (now Career, Technical, and Adult Education) in the U.S. Department of Education — on high school academic and technical achievement in two districts that participated in experimental and quasi-experimental strands of the study.[17] Few differences existed across groups in ninth grade, but by the end of tenth grade, students' test scores, grade point averages, and progress to graduation tended to be better for the students in Programs of Study than for control/comparison students. Another evaluation of Programs of Study found mixed results. While engagement seemed to improve, impacts on educational outcomes such as graduation did not in this pre-post, five-year longitudinal study of two cohorts of high school students in South Carolina's **Personal Pathways to Success Program**. Researchers attributed the mixed findings to uneven implementation of the program.[18]

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[14]Stern, Saroyan, and Hester (2012).

[15]Another CCASN study of two longitudinal cohorts found that only 52 percent or 53 percent of the students entering a CPA in tenth grade eventually graduated from that same academy. Most of those who leave the academy remain in the same high school or another California public high school. See Stern, Saroyan, and Hester (2013).

[16]Guha, Adelman, et al. (2014); Guha, Caspary, et al. (2014).

[17]Castellano, Sundell, Overman, and Aliaga (2011).

[18]Hammond et al. (2013).

Early college high schools (ECHSs) have been studied relatively thoroughly, although findings have not been disaggregated to compare the outcomes of students in the academically oriented ECHSs with those of students in CTE-oriented ECHSs.[19] One study examined 10 ECHS programs in five states, taking advantage of built-in lotteries in some cases to determine who would be admitted to the program. Three cohorts of students, totaling 2,458, entered the programs. The study found positive impacts on high school graduation (86 percent compared with 71 percent for the control group counterparts) and on postsecondary credentials (22 percent compared with 2 percent), although it is possible that the control group students would catch up over time.[20] Another study of ECHSs used an RCT and found positive impacts on ninth-grade outcomes, most notably on the proportion of students taking core college prep courses and succeeding in them.[21]

Dual enrollment, like ECHS, is another approach to easing the transition from high school to college. Several studies have found positive effects of **dual enrollment programs**, including one that included a CTE component.[22]

Finally, a study of **Exploring College and Career Options** (ECCO), a curriculum designed specifically for use in career academies and similar programs to offer students high-quality career and college exploration activities, showed that students in ECCO academies were more likely than a comparison group to score high on scales measuring college and career awareness. However, this was a descriptive study that would not meet high standards of rigor for studies assessing effectiveness.[23]

To sum up, rigorous evidence on pathway models and approaches is scant. On the other hand, much descriptive research suggests that many of these programs to improve outcomes hold *promise* for improving the experiences and academic outcomes of students who enroll in them.

States and Cities Where Pathway Programs Are Gaining Traction

As indicated in Appendix Table A.1, pathway approaches and models can be found in high schools and their communities all over the country. Although many states are heavily involved in this work, some have been doing it longer than others and have been able to scale their

[19]Edmunds (2010).
[20]Berger et al. (2013).
[21]Edmunds et al. (2012).
[22]Karp et al. (2009).
[23]Visher, Safran, and Altuna (2013).

initiatives more widely than others. These include California, with its Partnership Academies and Linked Learning initiatives, and Florida, with its large network of career academies. Three states stand out in their commitment by working to transform their vocational area schools into comprehensive, full-time, academically rigorous high schools with strong career exploration and preparation components: Massachusetts, New Jersey, and most recently Tennessee.

Similarly, certain cities have become important hubs for innovative high school reform efforts that incorporate career technical education. These include Long Beach, California (a high-performing Linked Learning district); Nashville and Philadelphia (where career academies are flourishing); and New York City (home to P-Tech and small schools of choice). Other places such as Houston, Boston, and Oakland, California, are emerging as models for how cities can pull together and build strong pathways for their students to help prepare them for successful transitions to postsecondary education and careers.

California illustrates how one state has built a strong system of pathways in the past few decades. Positive results from a small-scale replication of the Philadelphia academy model near Silicon Valley prompted the state to begin funding California Partnership Academies (CPAs) in 1984. The number of state-funded CPAs reached 467 in 2009-2010. Some of these were funded by special-purpose programs, such as to create "green" energy academies, and this funding has subsequently expired. About 200 CPAs remain with state funding that does not have an expiration date. Meanwhile, in 2005, the James Irvine Foundation (JIF) began developing the approach it came to call Linked Learning.[24] A Linked Learning pathway embodies virtually the same combination of features as a career academy. To promote the practice of Linked Learning, JIF created an organization called ConnectEd California, which began by supporting some exemplary pilot programs. ConnectEd then conducted a multiyear Linked Learning District Initiative, involving nine large school districts in the development of systems to enroll most or all of their high school students in Linked Learning pathways.[25] JIF and ConnectEd are now working to sustain the commitment to Linked Learning through development of several regional hubs throughout the state. JIF also created another organization called the Linked Learning Alliance to promote public awareness and support for policies to expand Linked Learning.[26]

In 2014, California awarded $250 million in state funds through a competitive grant process to regional consortia that would develop "career pathways" from grade 9 through 14, bridging from high school to community college. An additional $250 million will be awarded for a second round of grants in 2015. Each grant is paid out over three years. This large invest-

[24]See James Irvine Foundation (2015).
[25]See ConnectEd (2015).
[26]See Linked Learning (2015).

ment could help build institutional infrastructure that will sustain career and college pathways, including district systems, employer partnerships, work-based learning intermediaries, and dual enrollment agreements between high schools and community colleges. Some districts receiving these grants are indeed using them to expand and strengthen Linked Learning. However, preparing students for four-year colleges or universities is not required or even encouraged by these career pathway grants, and in some localities the resulting pathways will not in fact leave all options open for students.

Conclusion

High schools that include one or more of the pathway models and approaches described in this report can be found in virtually every state and in most large cities in the country. The movement to build career and college pathways has accelerated, mainly in response to local demand, and in some places aided by federal, state, and philanthropic support. But despite increased interest, only a small percentage of high school students are currently enrolled in pathways that include the key elements we have described in this brief. (No data currently exist to tell us the exact percentage.) There is much work to be done to ensure that the best programs are scaled to reach more students and are anchored by an infrastructure that ensures high-quality implementation, sustainability, and continuous improvement. What does such an infrastructure look like? What are the conditions these approaches need to thrive and grow?

- Strong support among leaders, from elected and appointed officials (such as mayors and state legislators) to school-level leaders (superintendents, principals) to business leaders
- Passion for change that goes beyond a few outspoken individuals
- Strong partnerships among districts, employers, and postsecondary institutions with a funded, experienced organization holding it all together
- Strong intermediaries with a track record in launching and sustaining programs through technical assistance and other supports
- Alignment with growing sectors that have jobs that pay family-supporting wages and offer opportunities for advancement
- Strong state support, including an accountability system that rewards schools for making students ready for both college and careers

If these elements are in evidence in a community, the foundation for building out pathway options for high school students may have a higher probability of success. Many of these elements need resources to take root. Funding is most acutely needed to:

- Build an infrastructure to form and sustain strong partnerships
- Expand the capacity of intermediaries with a track record of success
- Support quality professional development and technical assistance to help teachers, counselors, employment specialists, and school leaders perform effectively in these settings
- Reach marginalized groups of students, such as those living in extreme poverty or in rural areas, and belonging to underrepresented racial and ethnic groups
- Support use of web-based technologies to provide access to specialized curricula and facilitate employer engagement with student projects and work-based learning

Preparing high school students for both careers and college has been widely expressed as a goal of public policy, and this commitment has been reinforced by successful examples in many schools, cities, and states. However, large numbers of high schools are still stuck in the twentieth century, grooming some students for college and other students for work. A definitive national review of the nation's career-technical education found that "exemplary CTE programs are seen as exceptions to mainstream options. CTE is still perceived by many as an alternative to rigorous academics — a separate track for students who are not college bound."[27] To open choices for many more high school students to find a viable path to long-term career success will require additional effort by employers and other community partners, in concert with states, high schools, and postsecondary institutions. This work should focus on not only the quantity of programs being offered but, even more important, the quality. Supporting this effort would help build critical mass, moving high-quality career and college pathways into the mainstream of American education.

[27]Independent Advisory Panel of the National Assessment of Career and Technical Education (2014), p. 3.

Appendix A

Pathway Approaches and Models

Appendix Table A.1

Pathway Approaches and Models, Key Components, and Locations

Program	Type or Structure	Key Components	Sites and Locations	Intermediaries, Supporting Organizations, and Funders
Systemic approaches				
Linked Learning	Districtwide systems of pathways from ninth grade through community college	Rigorous academics integrated with CTE coursework, work-based learning, personalized learning environments, standards for high quality implementation	65 districts in California, Detroit, and Houston	ConnectEd, College & Career Academy Support Network (CCASN), Linked Learning Alliance, National Academy Foundation (NAF), Career Ladders Project, state and foundation funding
Pathways to Prosperity	State-based systems of pathways from ninth grade through college	Sectoral approach (advanced manufacturing, IT, health, construction and first responders)	10 states: MA, NY, OH, IL, MO, TN, GA, CA, plus 2 more soon	Jobs for the Future and the Harvard Graduate School of Education
Youth CareerConnect	Community-based systems based on partnerships between schools, districts, employers, workforce agencies, and postsecondary institutions	Rigorous academics with a CTE component, employer involvement, sector-based approach, work-based learning, pathways to college	Approximately 20 grantees in several states	Funded by the Department of Labor
Dual enrollment with a CTE focus	Formal arrangements between a state, school districts, and college systems	High school students enroll in CTE courses in local community colleges, earning college credit and/or certificates while completing high school programs; sometimes includes extra support	Found in many states; largest programs in Florida and California	State-level college and K-12 agencies

(continued)

Appendix Table A.1 (continued)

Program	Type or Structure	Key Components	Sites and Locations	Intermediaries, Supporting Organizations, and Funders
Models and programs				
Career academies	Small learning communities within larger high schools	Rigorous academics integrated with CTE coursework, work-based learning, personalized learning environments	Reportedly more than 6,000 nationwide (as defined by 2012 Schools and Staffing survey); more than 300 California Partnership Academies; almost 600 NAF academies; local networks in Philadelphia and Nashville	CCASN, NAF, National Coalition of Career Academies, Philadelphia Academies, state departments of education in CA and FL
High Schools That Work	Whole schools	Students take rigorous academic courses tied to their major; career exploration and preparation are emphasized	1,200 sites in 30 states and the District of Columbia	Southern Regional Education Board
New York City small schools of choice with a career focus	Large high schools broken into 200 small schools	Personalized learning environments; community partnerships, some with a career focus and work-based learning	200 schools; unknown how many have a career focus	NYC Department of Education

(continued)

Appendix Table A.1 (continued)

Program	Type or Structure	Key Components	Sites and Locations	Intermediaries, Supporting Organizations, and Funders
Models and programs (continued)				
P-Tech (a variant of the early college high school model)	Early college high school model	Prepares students for high-skill jobs in technology, manufacturing, health care, and finance. An integrated six-year program, combining high school, college, and career training. With a rigorous academic curriculum, targeted technical training, comprehensive workplace learning, and individualized support services and pathways.	Five high schools in NYC by 2014, 16 new programs starting statewide; Chicago	Funded by NYC Department of Education and New York State Education Department, overseen by a leadership council made up of the Executive Chamber, IBM, the State University of New York (SUNY), the State Education Department (SED), and The Business Council of New York State Inc.
Early college high schools with CTE focus	High schools where students earn credit toward a diploma and college degree concurrently, sometimes co-located on college campuses	Students take high school and college classes concurrently, including CTE classes leading to occupational credentials	Over 280 schools in 30 states; approximately 200 have a career focus, many of which prepare students for careers in STEM fields	Jobs for the Future, Bill and Melinda Gates Foundation
Apprenticeships	Stand-alone or linked with high school coursework	Students earn high school credit and occupational training with certificate; sometimes paid to attend classes	A few programs in North Carolina and possibly Wisconsin; still very rare	Department of Labor priority to increase apprenticeships; existing programs involve collaboration between employers and schools

(continued)

Appendix Table A.1 (continued)

Program	Type or Structure	Key Components	Sites and Locations	Intermediaries, Supporting Organizations, and Funders
Models and programs (continued)				
Transformed vocational high schools	Free-standing vocational high schools transformed into career-themed full-time high schools	Combines college prep curricula with career technical education	Massachusetts Tennessee New Jersey	State Departments of Education
New Tech Network	Project-based learning and technological infrastructure are embedded in curricula	Project-based learning, collaborative learning with integration of cutting-edge technology. Focus is on college and deeper learning. Includes specialized curriculum in STEM, global studies, and environmental education.	160 schools in 26 states and additional schools abroad	The William and Flora Hewlett Foundation, Carnegie Corporation of New York, Bill and Melinda Gates Foundation, Steelcase Education Solutions, Educate Texas, UTeach, Center of Excellence in Leadership of Learning (CELL), North Carolina New Schools Project, Bick Institute for Education, Asia Society
International Baccalaureate (IB) programs with career exploration component	Programs embedded in comprehensive high schools	Academic courses from the IB Diploma Programme, career awareness and exploration experiences, service learning, career-related studies	93 programs in 79 cities, in 28 states	International Baccalaureate Organization

Appendix B

National Experts Interviewed for This Report

Betsy Brand
Executive Director
American Youth Policy Forum

Kim Green
Executive Director
National Association of State Directors of Career Technical Education Consortium (NASDCTE)

Gary Hoachlander
President
ConnectEd: The California Center for College and Career

Brad Stam
Vice President
ConnectEd: The California Center for College and Career

Jack Jennings
Dean for Administration
Graduate School of Education, Harvard University

Marcie Mack
Interim State Director
COO of Oklahoma Department of Career and Technology Education

Susan Sandler
Sandler Family Foundation

Bob Schwartz
Professor Emeritus of Practice in Educational Policy and Administration
Graduate School of Education, Harvard University

James R. Stone III
Director of the NRCCTE at SREB
Southern Regional Education Board, University of Louisville

Johan Uvin
Acting Assistant Secretary
Career, Technical, and Adult Education (OCTAE), with U.S. Department of Education

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About MDRC

MDRC is a nonprofit, nonpartisan social and education policy research organization dedicated to learning what works to improve the well-being of low-income people. Through its research and the active communication of its findings, MDRC seeks to enhance the effectiveness of social and education policies and programs.

Founded in 1974 and located in New York City and Oakland, California, MDRC is best known for mounting rigorous, large-scale, real-world tests of new and existing policies and programs. Its projects are a mix of demonstrations (field tests of promising new program approaches) and evaluations of ongoing government and community initiatives. MDRC's staff bring an unusual combination of research and organizational experience to their work, providing expertise on the latest in qualitative and quantitative methods and on program design, development, implementation, and management. MDRC seeks to learn not just whether a program is effective but also how and why the program's effects occur. In addition, it tries to place each project's findings in the broader context of related research — in order to build knowledge about what works across the social and education policy fields. MDRC's findings, lessons, and best practices are proactively shared with a broad audience in the policy and practitioner community as well as with the general public and the media.

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Working in almost every state, all of the nation's largest cities, and Canada and the United Kingdom, MDRC conducts its projects in partnership with national, state, and local governments, public school systems, community organizations, and numerous private philanthropies.

Dr. Terry Holliday, Commissioner of Education for Kentucky, since July 2009. Under Dr. Holliday's leadership, Kentucky aligned its assessment and accountability system; implemented a Professional Growth and Effectiveness System for teachers, principals, and superintendents; and spearheaded a comprehensive system of school and district improvement planning and support. He is also the co-author of *Running All the Red Lights: A Journey of System-Wide Educational Reform*.

Dr. Holliday is a native of Belton, SC. He earned his bachelor's degree from Furman, master's from Winthrop University, and doctorate from the Univeristy of South Carolina.

Recognitions:

- President of Council of Chief State School Officers (2013-14)
- Serves on National Assessment Governing Board that sets policy for NAEP (2011-2015)
- Serves on Board of Overseers of the Baldrige Perfromance Excellence Program (2013-2016)
- Recipient of the 2015 James A. Kelly Award for Advancing Accomplished Teaching given by the National Board for Professional Teaching Standards
- Recipient of the 2014 Policy Leader of the Year by the National Association of State Boards of Education

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Accountability for College and Career Readiness: Developing a New Paradigm

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Accountability for College and Career Readiness: Developing a New Paradigm

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Abstract: As schools across the country prepare for new standards under the Common Core, states are moving toward creating more aligned systems of assessment and accountability. This paper recommends an accountability approach that focuses on meaningful learning, enabled by professionally skilled and committed educators, and supported by adequate and appropriate resources, so that all students regardless of background are prepared for both college and career when they graduate from high school. Drawing on practices already established in other states and on the views of policymakers and school experts, this paper proposes principles for effective accountability systems and imagines what a new accountability system could look like in an imagined "51st state" in the United States. While considerable discussion and debate will be needed before a new approach can take shape, this paper's objective is to get the conversation started so the nation can meet its aspirations for preparing college- and career-ready students.

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Evaluación y responsabilidad en la preparación universitaria y profesional: Desarrollando un nuevo paradigma.

Resumen: A medida que las escuelas de todo el país se preparan para nuevos estándares en el marco del *Common Core* (Núcleo Básico de contenidos), los estados están creando sistemas más alineados de evaluación y responsabilidad. Este documento recomienda un enfoque de evaluación y responsabilidad que se centra en el aprendizaje significativo, habilitado por educadores profesionales cualificados y comprometidos, y con recursos adecuados y apropiados, de manera que todos los estudiantes independientemente de su origen estén preparados tanto para completar estudios universitarios y carreras profesionales cuando se gradúen de la escuela secundaria. Sobre la base de las prácticas ya establecidas en otros estados y en las opiniones de responsables políticos y expertos en educación, este documento propone principios para los sistemas de evaluación y responsabilidad eficaces y se imagina lo que un nuevo sistema de evaluación y responsabilidad podría parecer en un imaginario "Estado 51" en los Estados Unidos. Si bien será necesario tener una gran discusión y debate antes de que un nuevo enfoque puede tomar forma, el objetivo de este trabajo es que comenzar la conversación por lo que el país pueda cumplir con sus aspiraciones para preparar a los estudiantes para que los estudiantes estén preparados tanto para la universidad y carreras profesionales.

Palabras clave: evaluación y responsabilidad; múltiples medidas; aprendizaje significativo; habilidades de aprendizaje más profundas; recursos rendición de cuentas; capacidad y responsabilidad profesional; Estándares Estatales Comunes; evaluaciones basadas en el rendimiento; universidad; carreras profesionales.

Avaliação e responsabilização na preparação universitária e professional: Desenvolvendo um novo paradigma.

Resumo: As escolas de todo o país se preparam para novos padrões no âmbito do *Common Core* (Núcleo Comum de conteúdos), e os estados estão criando sistemas de prestação de contas avaliação mais alinhados. Este documento recomenda uma abordagem para avaliação e prestação de contas que se concentra nas aprendizagem significativa, ensinados por profissionais qualificados e educadores comprometidos e recursos adequados e apropriados para que todos os alunos, independentemente da sua origem, sejam bem preparados para concluir as faculdade e desenvolver carreiras quando se formarem no ensino médio. Com base em práticas já estabelecidas em outros estados e nas visões de políticos e especialistas em educação, este trabalho propõe princípios para desenhar sistemas de avaliação e responsabilidade efetiva e imagina o que um novo sistema de avaliação e prestação de contas que poderiam aparecer em um imaginário "Estado 51" nos Estados Unidos. Embora vai ser necessário ter uma grande discussão e debate antes pode estabelecer uma nova abordagem, o objetivo deste trabalho é iniciar a discussão para que o país possa cumprir as suas aspirações para preparar os alunos tanto para os estudos universitários e carreiras profissionais.

Palavras-chave: avaliação e prestação de contas; medições; aprendizagem significativa; habilidades de aprendizagem mais profundas; prestação de contas; capacidade e responsabilidade profissional; Normas estaduais do núcleo comum; avaliações baseadas em desempenho; Universidade; carreiras.

Introduction

As new college- and career-ready standards for learning are being adopted by virtually every state across the country, it has grown clear that many states and communities see the need to move toward more aligned systems of assessment and accountability that support genuinely higher and deeper levels of learning for all students, and more flexible designs for schools so that their graduates can meet the challenges of a world in which both knowledge and tools for learning are changing rapidly.

Outline of the Paper

This paper outlines a proposal for a new approach to accountability that is responsive to these demands, drawing on the experiences of states and nations that have tackled these challenges, as well as research that has evaluated the consequences of different approaches to educational improvement.[1] It focuses primarily on how states might construct well-aligned systems for assuring high-quality education for all students, and treats aspects of the federal role and local activities from that perspective.

In the first section, we set out some principles for effective accountability systems. In the second section, we imagine how these principles might be enacted in an imaginary "51st state," as an illustration of one of the many ways the principles might be applied. We were advised and assisted in this process by a group of individuals deeply knowledgeable about policy and school improvement, who had convened to tackle the question of what a new accountability system might look like.[2] In the final section, we present examples of how elements of these proposals are already being enacted in some states and communities, in order to offer concrete form to some of the ideas.

Background

Policymakers and practitioners have learned a great deal from the experiences of the last 25 years and can build on educational improvements accomplished under both Democratic and Republican administrations. Our next steps should preserve the positive gains achieved as a result of a collective commitment to all of our children, while responding to current realities and concerns. Under the Improving America's Schools Act during the Clinton administration, we began the process of organizing school improvement around standards for learning, and measuring those standards periodically with state assessments, which included, in many states, portfolios and performance tasks assessing higher-order skills. Under No Child Left Behind (NCLB) during the Bush administration, we articulated a commitment to pursuing higher and more equitable outcomes

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[1] Much of this research is summarized in Darling-Hammond, L. (2010). *The flat world and education: How America's commitment to equity will determine our future.* New York: Teachers College Press.

[2] This paper was developed in the course of a series of discussions about the design of a new accountability system, convened by the Hewlett Foundation. The participants in these discussions offered substantial input and ideas. There was strong agreement about many of the ideas, and there were diverse perspectives about some. The final product reflects many of the individual and collective insights of the participants, but it does not reflect an endorsement by any of these individuals or the organizations with which they are affiliated. These intellectual contributors include, in addition to the authors: Stephen Bowen, Anthony Bryk, Richard Carranza, Michael Cohen, Michael Kirst, Paul Leather, Philip Lovell, Carmel Martin, Jal Mehta, Charmaine Mercer, Rick Miller, Chris Minnich, Scott Palmer, Arun Ramanathan, and Larry Rosenstock.

for children across social groups, and a commitment to providing well-qualified teachers for all children.

Since 2002, these efforts have been pursued largely through test-based accountability strategies that have articulated annual targets for growth, along with consequences for not meeting those targets. Noticeable gains have been registered on the state tests that have been the focus of these accountability efforts. However, progress has been less evident on the National Assessment of Educational Progress (NAEP), where 8th- and 12th-grade scores have been largely flat. And on the Program for International Student Assessment (PISA)—a more open-ended test evaluating how students can apply their knowledge and can demonstrate their reasoning—U.S. performance has declined in math, reading, and science between 2000 and 2012, both absolutely and in relation to other countries. On all of these measures, large and persistent achievement gaps remain among students by income, language background, and racial and ethnic group.

It is clear that the NCLB legacy that "every child matters" represents an evolution in our thinking. It is also clear that our current strategies are not sufficient to ensure that, indeed, every child will be enabled to learn the higher-order skills that they need to acquire to succeed in today's world. The fuller array of deeper learning outcomes students need to acquire include the knowledge, skills, and dispositions needed to foster critical and creative thinking, problem solving, collaboration, multiple modes of communication, uses of new technologies, the capacity to learn to learn, and the social-emotional intelligence that fosters a growth mindset and supports resilience and resourcefulness. The broadened definitions of readiness being adopted by states, along with proposals emerging under recent ESEA flexibility waivers, are creating demand for greater investments in rich curriculum; sophisticated teaching; and new, more robust assessment systems that go beyond the multiple choice approaches that have been prominent since 2001.

The emerging paradigm for accountability must be anchored in this new vision for learning and should be coherently aligned to systemic changes implied by that goal. It should foster a culture of inquiry and continuous improvement at all levels of the system. This new accountability model must foster collaborative change that can transform schools from the industrial model of the past to innovative learning systems for the future. Accountability will need to build school capacity and enable thoughtful risk-taking informed by continuous evaluation to inform improvement.

While it is evident that we must pursue new assessment and accountability systems, we should learn from the accumulated wisdom of recent experiences. We know that supporting student growth is as important as tracking the status of a child's achievement. We know it is important to pay constant attention to children's progress, and we must maintain systems for determining how student learning is advancing each year. We must work toward a clear vision of what proficiency means for student performance, anchored in realistic and defensible standards. We must hold ourselves accountable for the success of all groups of students. We must develop more informative reporting systems and be more transparent in our communication with parents. Our evolving standards must accommodate a broad set of knowledge, skills, and aptitudes. And, our new designs must allow us to compare student learning within and across schools and districts.

Additionally, we must be prepared to challenge ourselves to take the next steps to ensure we are on track to developing systems to support success for all learners. We are positioned to move to a system of multiple assessments "of, for, and as learning," with curriculum-embedded local performance assessments embodying and supporting learning in classrooms, along with richer and more meaningful assessments that evaluate learning at the state and local levels.

We propose this new approach knowing that it is an intermediate step forward that is designed within the constraints of the current educational system. We realize that the experience and

hard work of practitioners has expanded our vision of what is possible and our knowledge of how to implement this new vision. We will know a lot more because of innovations in policy, research, and practice that are challenging prior assumptions about what is taught, how students learn, when learning occurs, and where learning happens. It is our desire that this design supports those who are creating more personalized learning anchored in deeper learning, competency-based learning, and student agency. It is our hope that this next-best-step-forward we are proposing will be evaluated, improved, and enhanced as the work evolves. No system should be frozen for extended periods of time to the point where we find ourselves now: in a place where the system inhibits our ability to do what we learn is best for the students we serve.

A New Approach to Accountability for Learning

Genuine accountability must both raise the bar of expectations for learning—for children, adults, and the system as a whole—and trigger the intelligent investments and change strategies that make it possible to achieve these expectations. It must involve communities, along with professional educators and governments, in establishing goals and contributing to their attainment. It must attend to parents' desires and students' rights to be taught relevant skills that will matter for their future success by competent and caring professionals in adequately resourced schools that are responsive to their needs.

Such genuine accountability will nurture the intrinsic motivation needed to develop responsibility on the part of each actor at each level of the system. Thus, a new paradigm for accountability should rest on three pillars: a focus on meaningful learning, enabled by professionally skilled and committed educators, supported by adequate and appropriate resources.

It should be animated by processes for continuous evaluation and improvement that lead to problem solving and corrective action at the local level, supported by the state.

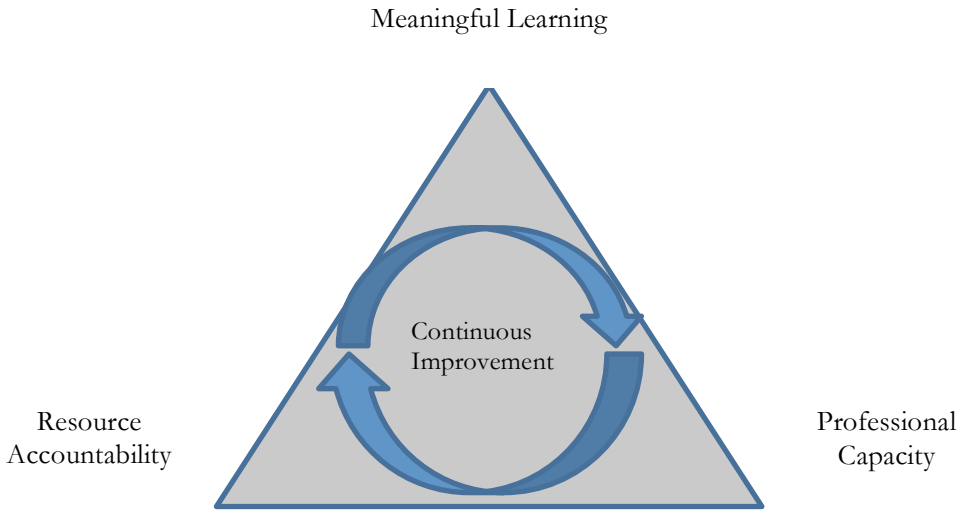

Figure 1. Key elements of an accountability system

Such a system should be: reciprocal and comprehensive, focused on capacity-building, performance-based, and embedded in a multiple-measures system. A reciprocal approach means,

first of all, that each level of the system should be held accountable for the contributions it must make to produce an effective system. A comprehensive system must attend to the inputs, processes, and outcomes that produce student learning: In others words, it must *build capacity* to offer high-quality education, while holding educators accountable for providing such education. In addition to adequate, intelligently allocated resources and professional expertise, this should include developing *problem-solving capacity* that guides ongoing improvement, informed by data and by processes such as strategic planning, evaluation, and school quality reviews that identify and correct problems in effective ways. Intelligent evaluation of accomplishments, needs, and next steps that can guide diagnosis and improvement requires a dashboard of useful measures of student, educator, school, and system efforts and outcomes that are developed at both the state and local levels.

Accountability for Meaningful Learning

If meaningful learning for all students is the focus of an accountability system, the system should use a range of measures that encourage and reflect such learning, and it should use those measures in ways that improve, rather than limit, educational opportunities for students. This means we need both much better assessments of learning—representing much more authentically the skills and abilities we want students to develop—and multiple measures of how students, educators, schools, districts, and states are performing.

These skills and abilities include both the applications of content knowledge reflected in new learning standards and the "soft skills" that allow people to be strategic in their learning. For example, David Conley's description of skills needed for college and career readiness includes key *cognitive strategies*, such as problem formulation, research, interpretation, communication, precision, and accuracy; key *content knowledge*, including the structure of knowledge; key *learning skills and techniques* that allow learners to be conscious of how they learn and capable of taking ownership of their learning; and key *transition knowledge and skills* that allow young people to understand and manage the context, processes, cultural and personal factors, and financial dimensions of the decisions they might make as they move into college and career settings (Conley, 2013).

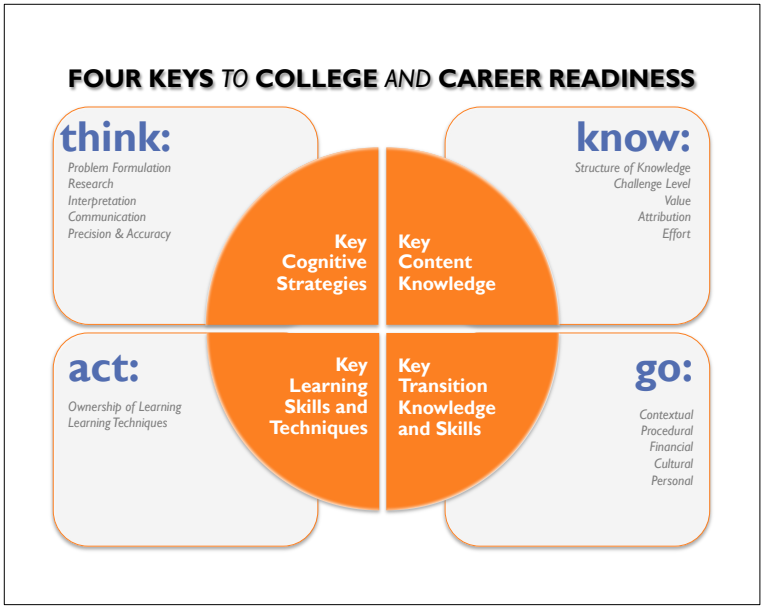

Figure 2. Keys to college and career readiness

A system of *higher-quality assessments*, both state-designed and locally developed, should include authentic performance tasks (e.g., classroom-based projects and products like those used in other countries) that assess and encourage the development of the full range of higher order skills. These kinds of assessments should be part of student learning evaluations and should also be part of a multifaceted *collection of evidence* for teacher evaluation and school review. Moving to a *system of assessments* necessitates that we abandon a singular focus on statewide summative assessments as the basis of all important decisions.

> As the CCSSO Accountability Advisory Committee (2014) recommended:
> Each state should establish rigorous statewide measures of CCR (such as through Common Core-aligned assessments), but should also provide latitude for district innovation to expand on those measures to include additional indicators of CCR skills or dispositions deemed important by the local community.

As in jurisdictions like Australia, Finland, and Singapore, the standardized measures can be used to validate the local assessment results, while the performance assessments are used to inform instruction, provide feedback to students and teachers, and enable diagnostic decisions, as well as to provide evidence of student learning. Both should be part of a research and development process to validate the assessments and to provide evidence of their effects on instruction and learning.

As performance tasks offer more detailed information about how students think and perform, they are more useful for formative purposes, although they can offer information for summative judgments as well. Many school districts are routinely using digital tools that engage students in embedded performance assessments as an inseparable part of the learning process. In a new system of assessments, it should be possible to move from an overemphasis on external summative tests, even as they become better representations of what students should know and be able to do, to a greater emphasis on assessment that can shape and inform learning. This strategy will reduce the "overtesting" burden, shifting time and energy from external summative events to formative assessments that can be used in more efficient and effective ways. (See Figure 3 below.) To achieve these benefits, we will need to rely more on adjudication at the local level where learning occurs. This implies more trust of professionals who are highly trained and supported with judgment tools and processes, such as common rubrics along with moderation and auditing processes for evaluating student work consistently.

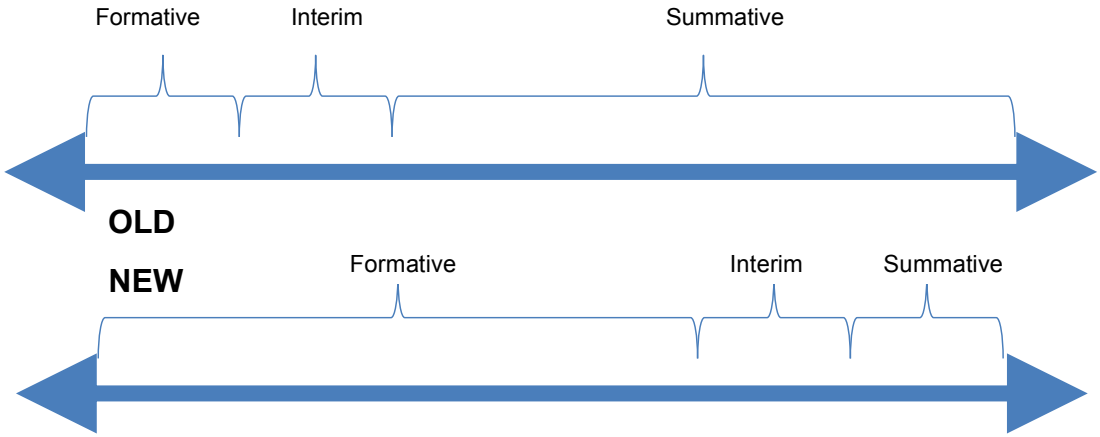

Figure 3. Relative emphasis on assessment purposes (P. Leather, personal communication, September 3, 2013)

In a new system of accountability, *multiple measures*, coupled with thoughtful systems of judgment, should be used to inform decision making at each level. *Transparency* in providing information to the public and to educators and policymakers is a key aspect of the new

accountability. Like businesses that use a dashboard of measures to provide a comprehensive picture of performance, we need a *dashboard of indicators* to inform key decisions (student placement and graduation; teacher evaluation, tenure, and dismissal; school recognition and intervention). Full and timely reporting of a wide array of information to parents and the community is a basic element of accountability. In line with professional standards, test scores should never be used alone for any such decision. Data should be thoughtfully interpreted and weighed by experts who make decisions based on multiple sources of evidence.

Through the federal waiver process for ESEA flexibility, states have already begun to incorporate broader measures into their accountability systems. Ultimately, long-term outcomes, such as success in negotiating college and careers, can become the true accountability measures. In the immediate future, a number of leading indicators can become part of state accountability systems. When evaluating schools, multiple measures of student learning can be coupled with other indicators of important education outcomes, such as,

- students' social-emotional competence, responsibility, citizenship, etc.;
- teachers' professional contributions to the professional team and the school as a whole, as well as evidence of individual practice; and
- school graduation rates, attendance, evidence of school climate (through surveys of teachers, students, and parents), rich curriculum opportunities, indicators of college and career readiness, and measures of successful transition to postsecondary learning and work.

This information should be used in a system that makes *strategic investments in educational improvement* rather than being used mechanically to mete out sanctions.

Resource Accountability in a Reciprocal System

Accountability tools must address the barriers to good education that exist not only within schools and classrooms, but at the district, state, and national levels as well. For although schools themselves may be appropriately viewed as a key unit of change in education reform, the structuring of inequality in learning opportunities occurs outside the school in the governmental units where funding formulas, resource allocations, and other educational policies are forged. In sum, if students are to be well-served, accountability must be reciprocal**.** That is, federal, state, and local education agencies must themselves meet certain standards of delivery while school-based educators and students are expected to meet certain standards of practice and learning.

Thus, in addition to learning standards that rely on many kinds of data, accountability must encompass *resource standards***.** With the advent of more challenging and authentic measures of student performance, the creation of accountable schools and school systems will demand methods for inspiring and ensuring equitable access to necessary learning opportunities, so that all students can achieve these learning goals. This means that local decisions about how people, funds, and time are allocated should not be separated from decisions about how the school is performing in relation to student learning. It also means that states should design funding policy to address equity and adequacy.

A complete view of accountability must take into account smarter resource allocation throughout the system, including the appropriate roles of states and school districts in supporting local schools in their efforts to manage resources more effectively to meet standards. This includes:

- allocating adequate school *resources* in relation to students' learning needs;
- ensuring equitable access to high-quality *curriculum* and instructional materials that support students in learning the standards; and

- providing well-prepared *teachers and other professional staff* to all students in settings that allow them to attend effectively to student needs.

Professional Capacity and Accountability

Also critical are *professional standards of practice* that should guide how educators are prepared and how they teach and support students. Accountability for implementing professional practice rests not only with individual educators, but also with schools, districts, and state agencies that recruit, train, hire, assign, support, and evaluate staff. Collectively, they hold responsibility for ensuring that the best available knowledge about curriculum, teaching, assessment, and student support will be acquired and used. Individuals and organizations should be responsible for building their own capacity for professional practice; they should be accountable for evaluating practice and student progress, and engaging in continual improvement based on the results.

These core building blocks of state accountability systems provide the foundation for schools' capacity to serve their students well:

- Educator capacity that enables teachers to teach for deeper learning and administrators to understand and support this work at the school and district level. Ensuring this capacity requires:
  —high-quality preparation, induction, and professional development;
  —accreditation and licensing based on evidence of teacher and administrator performance in supporting diverse learners to meet challenging standards; and
  —evaluation based on multiple indicators of practice, contributions to student learning, and contributions to colleagues that supports ongoing learning.
- School capacity to meet student needs is based on school, district, and state actions that ensure:
  —the availability of an appropriate mix of well-qualified staff who are properly assigned and adequately supported with professional development, and
  —well-designed curricula and educational programs that are consistent with research.
- System capacity for professional practice and improvement must be supported by:
  —awareness of research, as well as
  —inspection or school-quality review processes that evaluate policies, programs, practices, and outcomes; diagnose areas for improvement; and guide appropriate interventions.

Professional capacity and accountability are reinforced by a system that has developed professional judgment as a key expectation for evaluating the work of students, the work of other teachers, and the work of schools. Expert professional judgment, used to make sense of qualitative and quantitative information, can support more defensible decisions. In addition, it can help professionalize education by serving as a form of professional development for educators, and it can support a more genuine sense of responsibility as educators, who work with students and families, feel a sense of engaging in accountability themselves, rather than having it imposed externally. Finally, a more relational accountability is developed when educators act in a professional community with each other and when they interact in learning communities with families—something that can prove much more powerful than a more impersonal institutional accountability.

Continuous Improvement and Corrective Action

These three elements of a new system—supports for meaningful learning, accountability for resources, and accountability for professional practice—provide the grist for specific improvement processes that are informed by rich sources of data and diagnostic information about what is happening and what is needed to sustain growth and learning, as well as to solve pressing problems.

These processes, like quality reviews for schools, use data in combination with expert judgment to evaluate progress in ways that provide actionable guidance for improvement.

They should be accompanied, as needed, by resources that can be directly applied to a turnaround effort—for example, the time and skills of expert educators who are trained and funded to work with struggling schools in teams, school pairs, or networks; curriculum specialists who can help overhaul instructional plans and coach teachers; the availability of wraparound services where those are needed to support student welfare and success; models and supports for successful afterschool or summer programs; and so on.

The same general principles should inform thoughtful evaluations for educators, coupled with supports for improvement and learning reviews for students.

New Accountability in the "51st State"

What might this new accountability model look like in a state that decided to develop all of these components in an integrated system? Figure 4 illustrates what the components of the system might look like. This is, of course, only one approach among many that could be used to put these principles into action.

Accountability for Meaningful Learning

The 51st state wants students' and teachers' work to be focused on the kinds of knowledge and skills that will contribute to student success after graduation, developed in relevant and engaging ways. The state pursues *meaningful learning* by:

1) establishing college- and career-ready standards anchored in core academic knowledge and skills that recognize competencies considered by higher education, employers, and parents as critical to success;
2) supporting the development and distribution of high-quality curriculum materials and assessment tools for use by teachers and students; and
3) encouraging local districts to select and develop thoughtful, curriculum-embedded assessments of students' knowledge and skills that provide ongoing diagnostic information to support learning.

The state also plays a role in validating district and school outcomes and intervening in underperforming districts and schools to support corrective action.

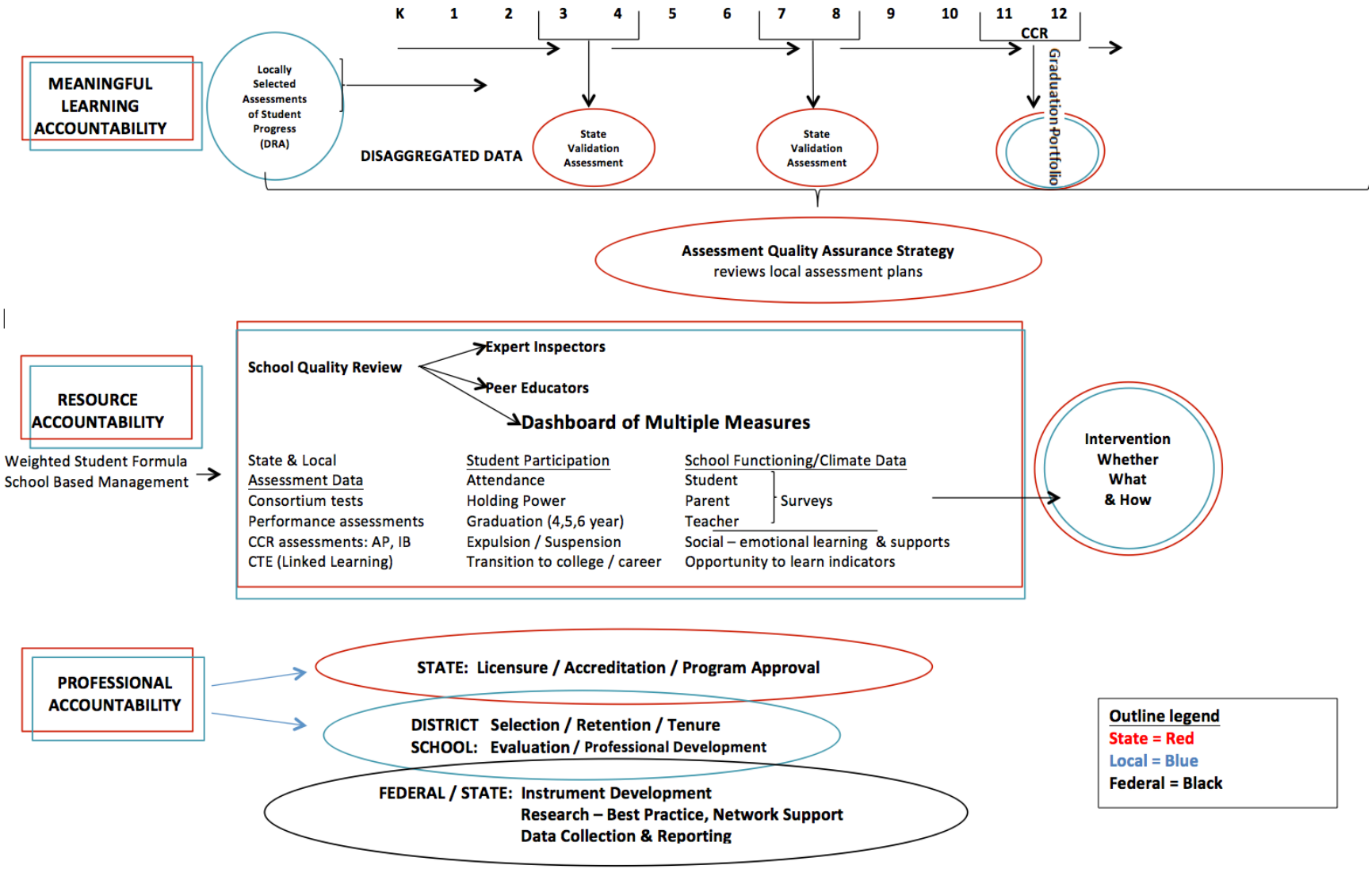

Figure 4. New accountability in the "51st state"

The system is premised on multiple measures, which include, as one component, robust local assessments that can evaluate deeper learning skills, as well as state standardized assessments of student performance to verify the results of local assessments. Such state validation could occur every year for every child, or at points in the grade spans that represent critical developmental junctures (for example, grades 3 or 4, 7 or 8, and 11 or 12), or differentially, depending on local needs. State assessments employ matrix sampling so that judgments can be made about a broader and deeper set of skills without overtesting children. *Disaggregation of results* is part of the reporting system for assessments.

Annual determinations of progress are maintained for every child at the school and district levels. These determinations are made more meaningful through tools that assess student movement along *learning progressions* (e.g., the Developmental Reading Assessment, the STEP reading assessment, writing portfolios providing evidence of growth in multiple genres along a continuum reflected in shared rubrics, and assessments of progress in mathematical thinking and skills along key progressions). Most local assessments are designed to be embedded in the curriculum, just as teachers' assessments in the form of papers, projects, presentations, quizzes, and other diagnostic evaluations currently are. However, these are designed to provide much richer diagnostic information more aligned to the new standards than many local assessments currently offer.

The 51st state recognizes that students learn in different ways at different rates so that growth is benchmarked against learning progressions rather than grade levels. It also recognizes that students may progress at different rates in different disciplines or skill areas, and students are served much more flexibly than in our current fixed organizational structures. Districts can use state-developed or approved tools to track student progress (including common tasks assembled in an assessment bank, for example), or they can develop their own and bring them to the state quality assurance panel for approval.

State validations of student learning include assessments in English language arts, mathematics, and science that combine sit-down tests with structured performance tasks (e.g., writing samples taken individually or organized in structured portfolio collections, mathematics applications, and structured scientific investigations). Locally administered tasks allow students to develop and demonstrate complex college- and career-ready skills that require more time and different modes of demonstration than a short sit-down test can accommodate: inquiry skills, written and spoken communication, ability to use feedback to revise, uses of technology, etc. The state provides common rubrics, training for scoring, and auditing to ensure that these can be scored reliably. Teachers are involved in designing and scoring open-ended items and tasks in both the state and local assessments as a means for professional learning about the standards as well as for sharing strategies for designing curriculum and teaching to meet the standards.

Together, these comprise a system of assessments using both state and local sources of information: standardized test measures of certain aspects of students' learning that are assessable in a testing context—including performance elements that measure some higher-order analytic skills. These are augmented by more robust local performance assessments that can support and evaluate harder-to-measure abilities: the ability to design and conduct extended investigations, to collaborate, to communicate in multiple forms, to persevere, to exhibit resilience, to use feedback productively, and learn to learn.

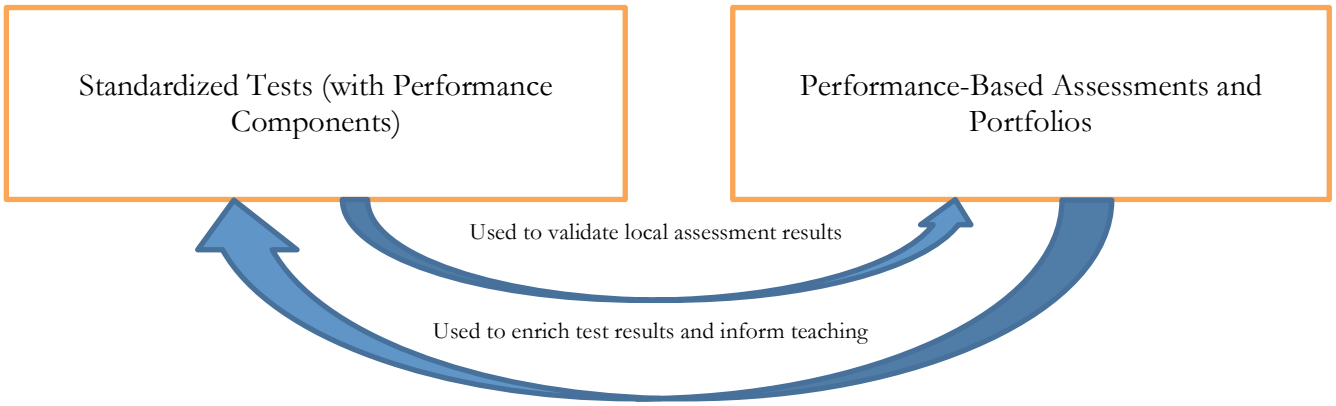

Figure 5. Elements of the assessment system

Measures embedded in local assessment programs that are used for state accountability purposes may be approved through *Assessment Quality Assurance Processes* (which can take the form of a panel comprised of expert practitioners and other curriculum and assessment experts, or other approaches to peer review). These processes are designed to ensure that the assessments and the ways they are applied (rubrics, scoring procedures, uses of results) are appropriate (e.g., that they measure the standards well and with high fidelity, are valid and can be reliably scored, and are used appropriately).

At both the state and local levels, curriculum and assessments support and reflect *deeper learning skills*, including critical thinking, problem solving, communication, collaboration, creativity, and the ability to learn to learn. The system also supports the development of social-emotional skills that colleges and employers recognize as important and that have both intra- and interpersonal dimensions, such as collaboration, resilience, perseverance, and an academic growth mindset, by including complex extended tasks that require students to learn how to work with others, to take and use feedback productively, to solve problems resourcefully, and to persevere in the face of ambiguity and problems. These kinds of tasks are, necessarily, embedded in the local curriculum, but those used for student or school judgments are scored with *common rubrics*, using *moderation and auditing processes* to achieve consistency when they are used as part of the reporting for accountability purposes.

State assessments address some of the key deeper learning skills as well, in less extended tasks, so as to signal what is valued and attended to. Local assessments can go further to foster and assess student initiative and choice, calling on students to be agents in their own learning by requiring them to design and complete their own investigations, assemble evidence about their progress and skills, and orchestrate collaborations that lead to the creation of products (e.g., software solutions, engineering designs, data collection and analysis, literary anthologies, topological maps, artistic productions, and museum exhibits) that emulate work or are created as a result of work in the world outside of school.

Table 1
51st State's System of Assessments

Types of assessment	Pre-secondary level	Secondary level
Curriculum guidance	*Curriculum Resources for New Standards:* Curriculum frameworks that include unit templates, formative instructional tools, and performance assessment options with quality descriptors (rubrics)	Courses of study with embedded assessments (e.g., IB, AP, Linked Learning (CTE), or Early College/dual credit pathways, optional state courses of study with syllabi, locally designed alternatives
External tests	State assessments validating mathematics, ELA, and science learning at each grade span, one test per grade in grades 3-5, 6-8, and 9-11 (subjects may alternate at different grade levels—see note below)	Consortium College and Career Ready Test, at grade 11 or when ready, including research/writing task and mathematical application
Common performance tasks, locally administered	Common Assessment Tasks: Common performance tasks evaluating inquiry in science and social studies once per grade span; guidance for arts, writing, and technology tasks or portfolios	Common assessments embedded in courses of study; guidance for exhibitions of mastery in different fields, including competency-based badging or micro-credentialing
Locally developed assessments	Local performance assessment systems—locally scored and internally moderated	Graduation portfolios supporting student profiles, guided by state standards—locally scored/externally moderated

Note: Although this description references classrooms, courses, and grade levels, the 51st state is moving toward a competency-based approach to education, which allows students to be assessed along a broader continuum of learning and achievement, using specific tests or tasks when they are appropriate for the individual student without regard to age or grade level.

At the capstone level, in addition to the *Consortium assessment of college- and career-readiness* at grade 11, students develop and maintain a *portfolio of evidence* (drawn from the assessments already described) regarding their performance in key areas of the curriculum and a *profile of their accomplishments* that can be communicated to colleges and employers. The portfolio serves as evidence that the student has met core competencies for readiness and has also prepared to meet personal goals for next levels of learning and work. Students complete some components in common and complete others that illustrate their unique talents and specialized studies and skills in chosen pathways. The common components are used to demonstrate college- and career-ready competencies that have been shown to be associated with postsecondary success:

- research and inquiry skills that require critical thinking and analysis (generally demonstrated in scientific investigations or social science research);
- quantitative reasoning applied to a real-world problem (through the use of statistical analysis in the science or social science investigations above, for example, or a project designed to illustrate mathematical problem-solving);
- communication skills (written and oral);
- collaboration skills; and
- use of technology for investigation and presentation of information.

These may be illustrated through tasks that are constructed to illustrate the mastery of disciplinary modes of inquiry in fields like science or history, or tasks that engage students in interdisciplinary problem solving. The competencies are incorporated into common rubrics; tasks are scored with moderation. Students are also encouraged to include demonstrations of competence in other areas, for example:

- world language—a demonstration of proficient communication in a language other than English, through a recorded conversation or a written paper or letter;
- arts—a demonstration of performance in an area of the performing arts; and
- career/technical education—a demonstration of competence outlined in a career pathway (often developed with industry).

These components should be completed as part of the assessments already planned in a school, refined to meet a "*portfolio standard*," and may be drawn directly from a student's participation in an existing program of study, such as the International Baccalaureate program or a College Board suite of courses that include such assessments. Schools that participate in the New York Performance Standards Consortium, many Linked Learning schools, and schools in Deeper Learning networks will also have already developed portfolios that address these expectations. The state provides a set of models for districts to use if they so desire. At least one of these components should be defended before a panel that allows students to share and explain their work orally and in writing with a panel of teachers, other students, and community members, and to respond to questions.

This compilation of evidence is assembled with other evidence about students' accomplishments (e.g., grades, test scores, extracurricular activities, work experiences, letters from employers or teachers) and a reflective statement from students about their experiences and goals in a *student profile* that can be used as a tool to guide student advisement, goal-setting, and communication with colleges and employers.

The state has developed a platform in which students can upload the profile and their work samples into a *digital portfolio* that can be used by employers and postsecondary institutions for admissions, advisement, and placement. The portfolio includes a summary that makes key evidence easily understood by a user within 10-15 minutes—providing summary data, a short writing sample, a short videotape of the student presenting a learning demonstration, and a table of contents that can direct those who want more information to a link. Some users will look only at the summary data. But a college considering a student for an art major could look more deeply at the art portfolio, while an employer wondering about a student's oral skills and career and technical knowledge could click on the link to the presentation about a design solution that the student developed. Students carry their portfolio with them after high school to support their strategies for postsecondary success.

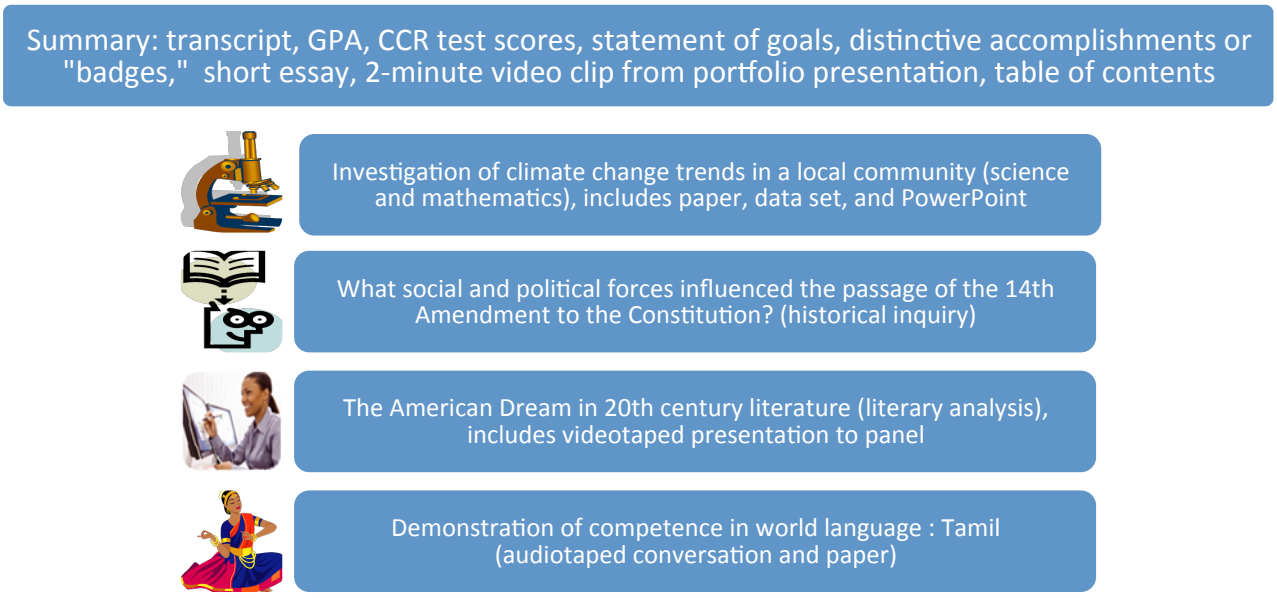

Figure 6. Digital portfolio

Accountability for Adequate and Intelligently Used Resources

The 51st state has pursued *resource accountability* by developing a weighted student funding formula that allocates funds based on pupil needs, allocating a greater weight to students living in poverty, English learners, and students in foster care. By providing resources more equitably, the state can expect schools that serve high-need students to provide the wraparound services that will enable children to come to school healthy and ready to learn and can ensure that they are adequately supported once they are there. In addition, the state holds districts accountable for intelligent and equitable use of funds by requiring that local communities be involved in decision making about budgets and programs, and by tracking key inputs and results for all districts and schools.

Transparency is a key aspect of the accountability strategy. A multiple measures system of accountability includes a dashboard of indicators—some required by the state for all schools and others proposed and tracked by local communities that have a voice in the accountability process. The measures include evidence about both outcomes and inputs, supporting *diagnosis* of what is working and what is not. Like the dashboard on a car, which provides indicators of speed, distance traveled, fuel, fluids, tire pressure, and more, the combination of measures signals where to look further to figure out how things are working. Outcome data are *disaggregated* by student race and ethnicity, poverty, language status, and disability status.

The report card for each school indicates current status and progress on each of the measures, much like the reporting system used in Alberta, Canada. (See Appendix A.) Thus, the public has access to evidence provided by districts and schools about what they offer their students and what the outcomes are; schools can see where they are doing well and where they may focus improvement efforts, and the state has a well-organized set of indicators about how schools are progressing and which ones need further assistance.

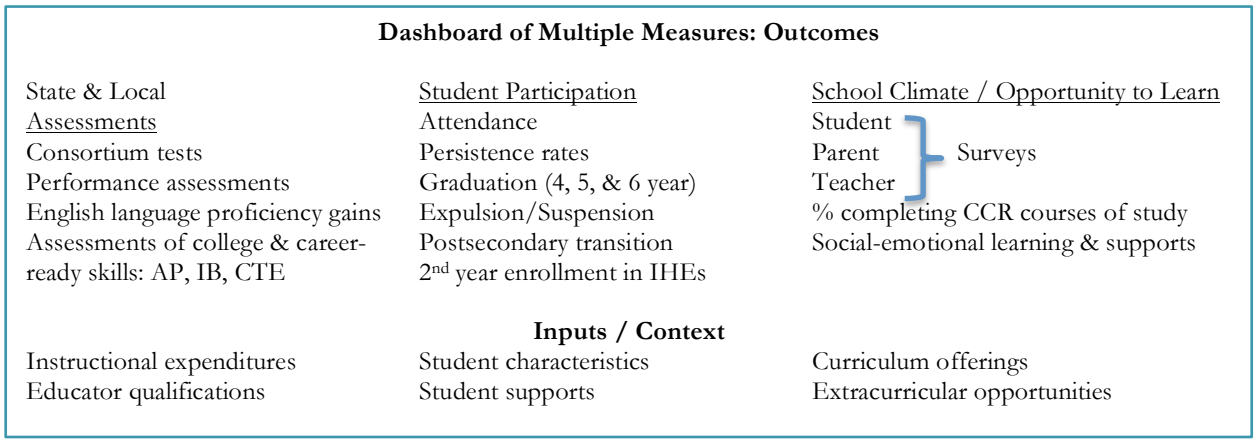

Figure 7. Dashboard of multiple measures: outcomes

Corrective action. These data are the grist for a *School Quality Review* system that helps schools assess their practices and work on areas for improvement, and that supports *intervention and corrective action* in schools where the evidence suggests that achievement is not adequate and students' needs are not being met.

The School Quality Review process brings together several elements that have not been joined before in most education policy systems: *robust data*, *educational expertise*, and *peer review***.** Like the Inspectorate model used in many countries abroad, it is guided by experts who are deeply knowledgeable about practice and well-trained in how to conduct a diagnostic inquiry into school practices and their relationship to the nature and quality of student learning. [Similarly, states like Kentucky and North Carolina have formed teams of expert educators (often highly accomplished teachers and administrators) to diagnose and help address the needs of low-performing schools.] Like U.S. accreditation systems, the engagement of peer reviewers from other schools in the state brings multiple perspectives to the task while stimulating a learning process for participants that expands their knowledge and sharpens their analytical skills. Like many research endeavors, the skillful use of robust quantitative data, much of which is comparable across schools, with qualitative insights developed from looking purposefully at teaching and student work and talking to stakeholders, allows reviewers to get a better understanding of how the school is working and what may help it improve. By combining these things, the process is more powerful and purposeful than accreditation approaches have been in the past.

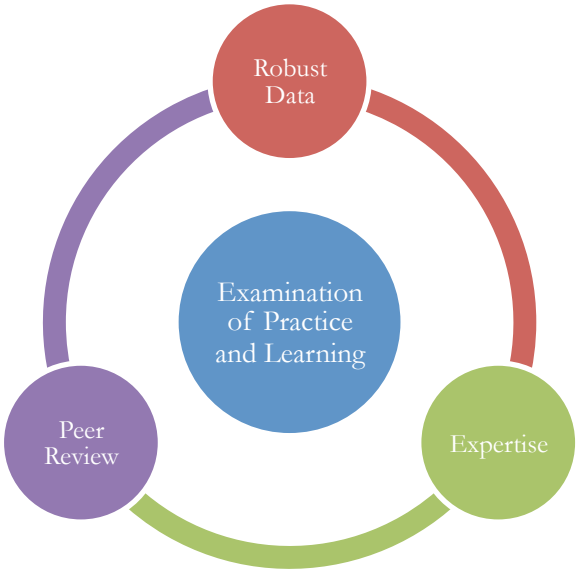

Figure 8. School quality review

In the 51st state, the School Quality Review process is available to all schools on a cyclic basis (typically every 5th year), and to schools that volunteer to participate more frequently because they want the additional help it can provide. It is activated immediately for schools that are identified by red flags associated with their students' achievement, participation, or opportunity-to-learn outcomes (low performance, little improvement, or large equity gaps). The Review is joined with an intensive support process in which the district and state identify and activate the human and other resources that are needed to enable the school to turnaround its practices and student performance. The system of identification for intervention is based on a set of criteria for school conditions and progress, rather than on a norm-referenced percentage of schools.

A *support capacity* has been built to work with schools or districts that request or are identified for improvement assistance. The support structures include:

- training and deployment of a cadre of Distinguished Educators—accomplished teachers, principals, and superintendents—who are intensively trained and made available to work with schools and districts that are engaged in intensive improvement or turnaround efforts;
- support for pairings and networks of schools focused on sharing expertise for the purpose of school improvement;
- professional development for school leaders and school teams implementing new curriculum standards, using assessments to inform improvement, and developing school improvement initiatives, including more productive professional learning communities and Peer Assistance and Review Programs; and
- training of mentors for teacher and administrator induction and coaches for veteran teacher support.

These structures build the capacity of schools to do their work well, while ensuring that students are not left to languish in schools that are performing poorly.

Professional Capacity and Accountability

Finally, the 51st state works to ensure *professional capacity and accountability* in a number of ways:

1) It has strengthened *initial entry* into the profession for teachers and administrators by:
   - *strengthening expectations* for programs to develop candidates' capacities to teach the Common Core State Standards and to work with diverse learners (including economically disadvantaged students, special education students, and English language learners). These capacities include a strong understanding of student learning and development; curriculum, instruction, and assessment within the content areas to be taught; classroom management; and how to work collaboratively with colleagues and parents;
   - *sharing information* about successful program models;
   - investing in *stronger clinical training* models through residencies and professional development schools;
   - evaluating candidates' readiness to teach and lead through *teacher and administrator performance assessments for licensing* and feeding results back into programs for reflection and improvement;
   - leveraging higher quality preparation through *performance-based accreditation* that examines program results (through pass rates on teacher and administrator performance assessments; graduate and employer surveys, entry and retention rates in teaching and administration, and evidence of graduates' later effectiveness) as part of a more serious accreditation process;
   - supporting *high-quality induction* by training and supporting the time for mentors to work closely with beginning teachers and administrators.
2) It has built on this stronger foundation to develop *professional learning systems* that:
   - offer high-quality *curriculum resources* (including instructional materials and videotapes of practice) around which professional development can be organized and on which teacher teams can build, try, and refine locally adapted lessons and instructional strategies;
   - organize *sustained, high-quality professional learning opportunities* for networks of educators (e.g., through subject matter projects) focused on developing practice through extended institutes, collective inquiry, action research to solve complex problems of practice, and coaching;
   - provide incentives for schools to establish flexible structures within the teaching day and year that provide time for teachers to participate in collegial planning and job-embedded professional learning opportunities;
   - provide ongoing training for schools to develop effective *professional learning communities* that can analyze student learning and school progress in relation to practice, and engage in ongoing improvement.
3) It has helped local districts build *stronger evaluation systems* that:
   - are based on *professional standards* that are used to assess educators' practices from pre-service preparation to induction and through the remainder of the career;
   - combine *evidence from several sources*, including standards-based measures of educator practice and valid evidence of student learning that is appropriate to the curriculum

and students being taught. These are examined in relation to one another, along with evidence of professional contributions to school improvement;

- include opportunities for both *formative and summative* evaluation, providing information both to improve practice and to support personnel decisions;
- tie evaluation to useful *feedback* and to professional learning opportunities that are relevant to educators' goals and needs;
- acknowledge the time, curriculum resources, and professional learning needed to learn to implement more complex standards, such as the CCSS and NGSS;
- *differentiate support* based on the educator's level of experience and individual needs;
- build on successful *Peer Assistance and Review models* for educators who need assistance (both administrators and teachers) to ensure intensive, expert support and well-grounded, timely, and effective personnel decisions;
- value and promote *collaboration***,** which feeds whole school improvement;
- are a priority within the district, with *dedicated time, training, and support* provided to evaluators and to those who mentor educators needing assistance.

4) It has promoted *equity* in the provision of expertise to students by:

- *equalizing resources* to districts while tracking and encouraging the provision of well-qualified and effective teachers to all schools;
- creating a greater supply of experienced, qualified, in-field, and effective teachers to high-need schools through *service scholarships* to recruit a diverse pool of high-ability educators to high-need fields and locations by paying for their preparation in exchange for at least 4 years of service in the state's schools and through *teacher residency programs* that recruit, prepare, and mentor candidates to learn to teach well in high-need districts; and
- building professional capacity through the state by creating a *statewide learning system*, and developing a State Education Agency that sees its job as building professional expertise rather than just managing compliance. This agency *shares research and best practices* through its website and dissemination activities (newsletters, conferences, school quality review activities); *documents and disseminates what is working in schools* in the state in multiple ways, including case studies, site visits, and tools to support local policy and practice; and sets up and supports *learning networks* that allow districts, schools, and educators to learn from one another.

At the end of the day, policymakers and practitioners hope that these strategies will produce schools that are *responsible* for implementing a strong teaching and learning system and *responsive* to the individual needs of all the students they serve.

Emerging Elements of a New Accountability

Many of these elements of a responsible and responsive accountability system are already emerging in states and districts across the nation. A few of these are highlighted here.[3]

[3] This section draws in part on a report by the Center for American Progress and the Council of Chief State School Officers. (2014). *Next generation accountability systems: An overview of current state policies and practices.* Washington, DC: Center for American Progress.

Accountability for Meaningful Learning

About 40 states have been involved in two consortia that are developing new assessments of the Common Core State Standards: the Partnership for Assessment of Readiness for College and Careers (PARCC) and the Smarter Balanced Assessment Consortium (SBAC). These promise to include more open-ended questions and tasks that can better evaluate higher-order thinking and performance skills than many state tests included in the past. A number of states are participating in an Innovation Lab Network under the aegis of the Council of Chief State School Officers. They are strategically designing a variety of ways to develop and assess the full range of Common Core State Standards and, beyond those, many of the additional college and career readiness skills—the abilities to self-assess, plan, persevere, use feedback, and learn independently—needed for success in the world after high school.

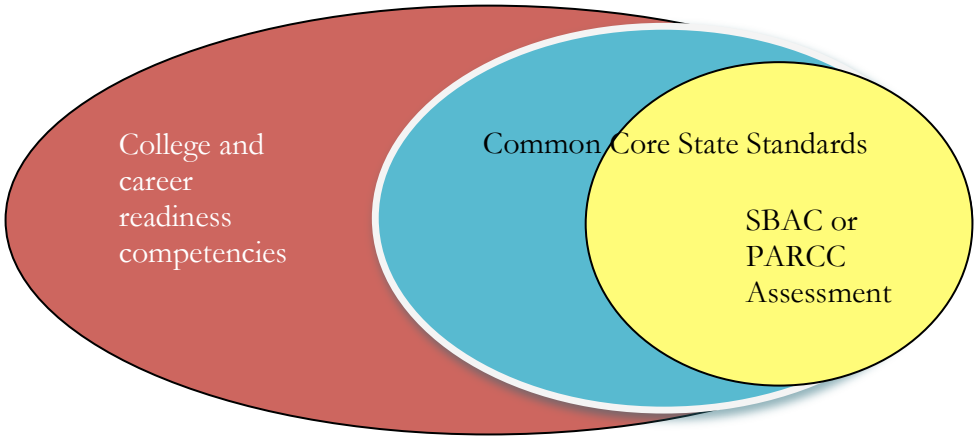

Figure 9. Competencies to be developed and assessed

New Hampshire, for example, has begun to create a system of state and local performance assessments that aims to "promote the use of authentic, inquiry-based instruction, complex thinking, and application of learning . . . [and] incentivize the type of instruction and assessment that support student learning of rich knowledge and skills." In addition to the Smarter Balanced Assessments in English language arts and mathematics, this system will include a set of state-developed common performance tasks in the core academic subjects, plus locally designed assessments made available through a web-based bank of local and common performance tasks, and a district peer-review and auditing process to ensure validity and reliability.

Each district will propose to the state a locally designed Performance Assessment of Competency Education (PACE) system that will provide measurable outcomes aligned with district goals and state priorities. The system will include annual determinations of student achievement and growth through locally designed and state-validated systems of performance assessments, and will provide external validation of the performance assessments through statewide summative assessments of college and career readiness in grades 4 and 8. New Hampshire is supporting districts' development of PACE models by developing common statewide performance tasks and the necessary processes, tools, and protocols for validating high-quality tasks aligned to state standards. The state is also organizing professional development institutes and regional support networks, and is developing a network of practitioner "assessment experts" to support schools.

The district peer review audit process is intended to help build local capacity to do this work well. Peer review teams of external practitioners will review evidence submitted by the district, and will also collect additional data and provide feedback according to common criteria during a site visit

to the district. According to current designs, the peer review process will be used to provide formative feedback to districts during the first 2 years. By the 3rd year, however, the audits will become integral to the approval process for districts seeking to implement a Performance Assessment of Competency Education model for accountability purposes.

Kentucky maintained a system of performance assessments for two decades, including a writing portfolio and mathematics performance tasks, and is now redesigning its systems around Common Core State Standards (evaluated in part through the PARCC assessments) and a college- and career-readiness agenda. One element of this new effort has been to free some districts from state requirements though legislation creating Districts of Innovation (DofI). Among these districts, Danville has incorporated the portfolio graduation strategies developed by schools in the New York Performance Standards Consortium: a set of rigorous, performance-based tasks at the high school level that must be presented to a committee, defended, and revised to meet a high standard. The tasks include a scientific investigation, a social science research paper, a literary analysis, and a mathematical modeling paper, which, when completed at a passing level, waives students in these schools out of the New York Regents Exams. Consortium teachers score the tasks in a moderated system. Other Kentucky Districts of Innovation are adopting similar strategies.

House Bill 424 had proposed an amendment to Kentucky's previously passed Districts of Innovation legislation that would allow such districts to apply for modification or waiver of provisions of the statewide assessment system if the alternate assessment plan meets the intent of the statewide assessment system and is consistent with the requirements of NCLB, its successor, or federally granted waiver (Center for American Progress and the Council of Chief State School Officers, 2014).[4] Similar to New Hampshire, Kentucky hopes to develop technical guidance and capacity to validate locally designed performance-based assessment and accountability models that would include external audits via statewide summative assessment in grades 3, 5, and 8. The House bill has not yet been passed in the Senate, however. In the meantime, Kentucky is working on plans to encourage Districts of Innovation to operate performance-based assessment and accountability models while still administering all statewide summative assessments required in statute, at least for a transitional period as necessary.

In Rhode Island, a high school diploma requires successful completion of at least two performance-based diploma assessments, the options for which are decided by the district and may include graduation portfolios, exhibitions, comprehensive course assessments (50% of which must be performance-based and include evaluation of knowledge application), or Certificate of Initial Mastery. Districts are charged with developing the performance-based diploma assessments, which must include demonstrations of both core content proficiency and applied learning skills, as determined by a panel that evaluates the student performance using a state-approved rubric. Within the allowed forms of assessment, the Graduation Portfolio option is defined in regulation as a "collection of work that documents a student's academic performance over time and demonstrates deep content knowledge and applied learning skills," with evidence including both required and student-selected performance-based demonstrations, reflections, and a final presentation (Center for American Progress and the Council of Chief State School Officers, 2014).[5]

Similarly, high school diplomas in Maine are awarded based on demonstrations of proficiency around the Maine Learning Results and Guiding Principles (Center for American Progress and the Council of Chief State School Officers, 2014),[6] and must take into account, "in addition to any local course work and accumulation of credits, a broad spectrum of learning

[4] For further details, go to http://legiscan.com/KY/bill/HB424/2014
[5] For further details, go to http://sos.ri.gov/documents/archives/regdocs/released/pdf/DESE/6433.pdf
[6] For further details, go to http://www.maine.gov/doe/proficiency/about/proficiency-based.html

experiences that may include internships, portfolios, long-term capstone projects," and other "appropriate learning experiences that provide opportunities to demonstrate proficiency" (Center for American Progress and the Council of Chief State School Officers, 2014).[7] Like New Hampshire and Kentucky, Maine is part of Innovation Lab Network activities to build a shared performance assessment bank and to use local performance assessments as part of the state accountability system.

Resource Accountability

In a reciprocal system, not only does the state hold schools, educators, and students accountable for meaningful teaching and learning, but also parents and communities can hold the state accountable for allocating resources in a fair and equitable manner and for investing in ways that are designed to accomplish the goals of career- and college-readiness. Adequate and intelligently used resources thus become part of the accountability system, along with indicators of system performance that allow an evaluation of whether appropriate progress is being made at the school and district levels.

California recently adopted a Local Control Funding Formula (LCFF), which brings new money into the system that will increase annually over the next 6 years, and allocates all of the funding based on pupil needs. LCFF eliminates categorical funding while providing a base grant for each LEA based on per average daily attendance, with an extra 20% boost for each disadvantaged student (low-income, English learner, or foster care child) and additional funding for those who attend schools where at least 55% of students are disadvantaged (California Department of Education, 2014). This will reverse the effects of a system that previously provided the least resources to the highest-need students.

The Local Control and Accountability Plan (LCAP), which accompanies the new funding, requires California districts to develop, adopt, and annually update a 3-year accountability plan that includes identifying goals and measuring progress for student subgroups across multiple performance indicators. The state requires indicators from state assessments (the SBAC tests will measure Common Core State Standards, and the Early Assessment Program provides information to state universities about college readiness) and other kinds of assessments (e.g., Advanced Placement tests, English proficiency scores), as well as information about student persistence, graduation, college-going, school climate, and parent input and participation. Districts can add to the state measures.

Allocating Funds Based on Student Needs

Several other states and districts have developed approaches like California's. For example, Massachusetts adopted a weighted student formula funding system in the 1990s that is credited—along with its investments in early childhood education, extensive professional development for teachers, and new standards and assessments—with propelling large gains in student achievement in the state, especially among previously low-achieving students (see Guryan, 2001). Similar plans have been proposed in Ohio (Governor Strickland's Evidence-Based Model (EBM) school funding reform plan proposed in 2009, which also included a teacher compensation system to combat the inequitable distribution of teachers [Center for American Progress and the Council of Chief State School Officers, 2014]),[8] and in Colorado (legislation proposed in 2013 that added weights for low-

[7] For further details, go to http://www.mainelegislature.org/legis/bills/getPDF.asp?paper=SP0439&item=1&snum=125

[8] For further details, go to https://education.ohio.gov/getattachment/Topics/Finance-and-Funding/State-Funding-For-Schools/Financial-Reports/District-Payment-Reports/PASS-Summary-FY10-11v2.pdf.aspx

income students and English learners, while creating a teaching and leadership investment, an innovation fund, and targeted investments in preschool and full-day kindergarten [Herman, 2013]).

New Mexico created one of the first weighted student funding formulas in the country in 1974, which divorced student funding from property tax values and allocated dollars based on a set of identified student needs (e.g., poverty, English learner status, special education needs) (Center for American Progress and the Council of Chief State School Officers, 2014).[9] Because the base funding has fallen behind and some district needs have outpaced the plan, legislators have been considering updating the formula. Meanwhile, through its recently approved ESEA waiver, New Mexico requires schools to monitor the return on investment for interventions in underperforming schools and shift strategies if they are not seeing results. The state conducts annual monitoring of this through the budgeting process. It also works to identify and replicate interventions showing strong effectiveness.

Baltimore, New York City, and San Francisco all finance their schools through a Fair Student Funding system whereby each school receives its share of the total through a per-pupil formula that allocates a base level of funding for each student and supplements this with weights for students with particular learning needs and circumstances (Center for American Progress and the Council of Chief State School Officers, 2014).[10] Each allows principals to make key financial decisions for their schools, generally in collaboration with a school site council, and creates a school report card or other data system to record results that are intended to shape future programmatic and budget decisions (Center for American Progress and the Council of Chief State School Officers, 2014).[11]

Evaluating School Needs and Outcomes Using Multiple Measures

As suggested by these examples, evaluating the thoughtful use of resources in terms of the students' needs and the outcomes that the investments produce requires a broad and thoughtful set of information. During the 1990s, a number of states included multiple measures in their systems of accountability. Most of these systems were displaced by NCLB requirements; however, systems that report multiple measures have begun to return with the flexibility waivers under ESEA.

Perhaps the most comprehensive approach has been developed by the California Office to Reform Education (CORE) districts in California, which have built on California's multiple measures system under the LCAP and developed a multi-dimensional system for informing school accountability and improvement. These districts (Fresno, Long Beach, Los Angeles, Oakland, San Francisco, Santa Ana, and Sanger) joined together and were granted a federal flexibility waiver under NCLB, which includes the accountability measures shown below.

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[9] For further details, go to http://www.nmlegis.gov/lcs/lfc/lfcdocs/finance facts public school funding formula.pdf

[10] For further details for Baltimore, go to http://www.baltimorecityschools.org/cms/lib/MD01001351/Centricity/Domain/74/FY14-AdoptedBudget-CompleteBook.pdf. For New York, see http://schools.nyc.gov/AboutUs/funding/overview/default.htm. For San Francisco, see http://reason.org/files/weighted_student_formula_sanfrancisco.pdf

[11] For further details, go to http://www.baltimorecityschools.org/cms/lib/MD01001351/Centricity/domain/6625/pdf/20120316-FSF101-FINAL.pdf; http://reason.org/files/weighted_student_formula_sanfrancisco.pdf

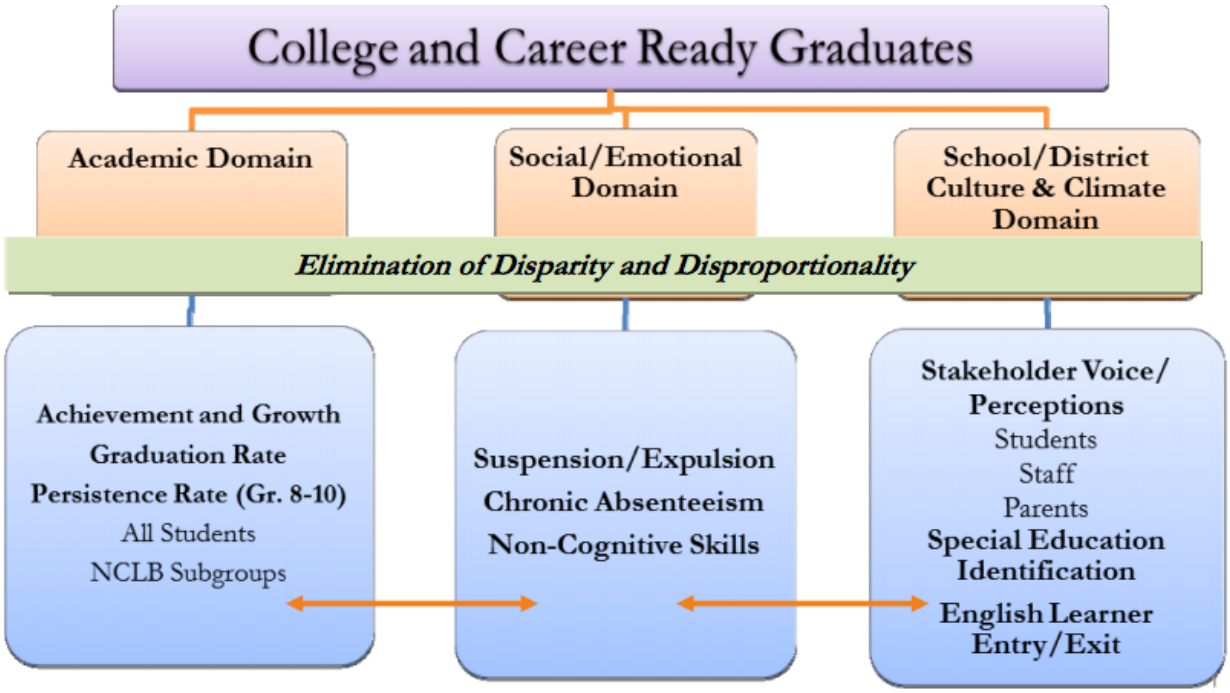

Figure 10. CORE accountability structure

Many of these measures are required by the state LCAP, but others, such as the non-cognitive skills associated with social-emotional learning, are locally determined and measured. All of these measures are considered individually in informing schools about their progress and supporting ongoing improvement efforts.

Other indicators used in California's LCAP are also reported in CORE districts, including measures of students' opportunities to learn and parents' opportunities to be involved in their children's education. These include:

- the availability of qualified teachers, adequate facilities, and necessary materials;
- student access to a broad curriculum, including the core subjects (including science and technology), the arts, and physical education;
- student access to college coursework and career pathways;
- evidence of parent participation and opportunities for input.

To meet federal requirements for identifying low-performing schools, CORE developed a School Quality Improvement Index comprised of weighted measures within three domains:

- Academic (achievement and growth, graduation rate, and persistence rate in grades 8-10, together 60% of the index);
- Social/Emotional (suspension/expulsion, chronic absenteeism, and noncognitive skills, together 20% of the index); and
- School/District Culture & Climate (stakeholder voice/perceptions of students, staff, and parents; special education identification; and English learner entry/exit, together 20% of the index) (Center for American Progress and the Council of Chief State School Officers, 2014).[12]

[12] For further details, go to http://www2.ed.gov/policy/eseaflex/approved-requests/corerequestfullredacted.pdf

To couple resource allocations with identification of school needs, CORE directs improvement resources (formative tasks, student remediation courses, professional development for teachers) toward any school that falls below certain thresholds (e.g., a specific pass rate on the 10th grade California High School Exit Exam), regardless of the school's overall rankings. CORE has also outlined a resource-enriched School Quality Improvement process that builds professional capacity in schools that are identified as priority schools, as well as sharing expertise among all schools in the consortium (Center for American Progress and the Council of Chief State School Officers, 2014).[13]

Some other states have also begun to develop multiple-measures approaches to assessing school performance in ways that are intended to focus attention on key dimensions of learning and to create incentives for attending to important outcomes. Generally speaking, under the terms of their ESEA flexibility waivers, these states must identify schools as "priority" or "focus" schools based only on their math and ELA test scores and, in some cases, graduation rates. However, many have proposed using broader measures to inform schools and the public about progress on other areas of learning and performance they care about. Several have indicated a desire to include these more centrally in the accountability system. Ideally, such indicators of school performance would be directly tied to a process by which critical resources are allocated to address school and student needs, as is now the case in California (described earlier).

As an example of expanded measures for evaluating schools, in 2011, Wisconsin replaced the Adequate Yearly Progress system with a multiple-measure accountability index comprised of student achievement, student growth, achievement gaps, and an indicator of "On-Track to Graduation and Postsecondary Readiness" as measured by graduation rates, attendance rates, and ACT participation and performance, as applicable for all students and sub-groups (Center for American Progress and the Council of Chief State School Officers, 2014). The system takes into account other factors, including test participation, absenteeism, and dropout rates. Wisconsin is considering future inclusion of additional measures, such as science proficiency and postsecondary enrollment.

Oregon's ESEA waiver redesigned the Oregon Report Card for schools and districts to incorporate multiple measures, including academic achievement, academic growth, and—for high schools—graduation rates, all displayed by subgroup (Center for American Progress and the Council of Chief State School Officers, 2014).[14] While not currently considering school climate data a formal part of the accountability system, the Oregon Department of Education recently administered a statewide survey of public school teachers and administrators to gather information on how educators perceive their teaching and learning conditions and school climate. The 2014 Teaching, Empowering, Leading, and Learning (TELL) Oregon Survey hopes to deliver insights that can impact evidence-based policymaking as well as state and local decisions that improve student outcomes and teacher retention (Center for American Progress and the Council of Chief State School Officers, 2014).[15]

Illinois's school rating system also includes the potential for schools to earn bonus points for strong results on a school climate survey. Illinois will also include English language proficiency exams in its new accountability system, thereby increasing school accountability for the performance of English learners. The state will also include science and ACT exams as a measure of college readiness for high school students (Center for American Progress and the Council of Chief State

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[13] For further details, go to http://www2.ed.gov/policy/eseaflex/approved-requests/corerequestfullredacted.pdf

[14] For further details, go to http://www.ode.state.or.us/news/announcements/announcement.aspx?=9408

[15] For further details, go to http://www.ode.state.or.us/news/announcements/announcement.aspx?ID=9578&TypeID=5

School Officers, 2014).[16]

New Mexico's accountability index includes student achievement and growth, graduation rate, attendance, and college and career readiness. The state places extra focus on the growth of the lowest performing students by giving schools as much credit for the growth of the bottom quartile as for the growth of the top three quartiles. In New Mexico's ESEA waiver, school ratings include a student survey that measures opportunity to learn. The state also offers schools bonus points for strong student and parent engagement.

Oklahoma's approved accountability system uses parent and community engagement and school culture indicators as part of school ratings. Schools can earn bonus points for high scores on a school climate survey as well as high parent/community volunteer hours.

Multiple measures can provide a better accounting of what schools are doing and with what results. These broader indicators of school performance may help draw attention to areas of growth and need that can direct investments and improvement efforts. Whether educators and policymakers take these next steps will influence the extent to which schools actually make progress in better educating students. For accounting to be translated into genuine accountability, states and districts need processes by which they figure out what schools need and then make the investments of resources and expertise that will enable educators to act on this knowledge.

In addition to providing adequate and equitable resources to schools through the state funding system, resource accountability may include efforts to provide wraparound services for students who live in low-income communities to ensure early childhood learning, health services, and before- and after-school supports that level the playing field. Resource accountability can also include specific additional investments for schools found to be struggling. In many cases, these initiatives are designed to build professional capacity to teach and support students effectively, as described in the next section.

Professional Capacity and Accountability

One way in which indicators can be translated into actionable ideas for improvement is by combining them with a qualitative analysis of what a school is doing—and how it might improve—conducted by experts. Much like the inspectorate process in many other countries, School Quality Review processes have evolved in some parts of the United States, combining analysis of data with on-site review by expert educators, often accompanied by peer review from inside or outside the school.

Analyzing teaching and school practices to evaluate the extent to which they represent a professional standard of instruction and care is a key element of enforcing professional accountability for practice. Because of the evidence that School Quality Review processes enhance the professional knowledge of practitioners who are involved, we also include them here as a component of professional capacity-building. In systems that add ongoing expert support for school improvement to the review process, this capacity-building element is even stronger.

Evaluating and Supporting Professional Practice through School Quality Reviews

During the 1990s, New York state developed a School Quality Review (SQR) with the assistance of David Greene, one of Her Majesty's Inspectors from Great Britain. The review began with a school self-assessment that provided a foundation for a visiting team of educators from other schools guided by an expert inspector using protocols that directed attention to the areas of school operations to be evaluated, with a strong focus on teaching and learning. The review examined

[16] For further details, go to http://www.americanprogress.org/wp-content/uploads/issues/2012/07/pdf/nochildwaivers.pdf

student work as well as instruction in classrooms. Similar reviews were developed in Chicago, California, and Rhode Island, among other places. Though discontinued at the state level during a round of budget cuts, a version of the SQR remained in New York City and evolved over time, and continues today.

The New York Quality Review involves 2- or 3-day school visits by experienced educators to each NYC school (Center for American Progress and the Council of Chief State School Officers, 2014).[17] The external evaluator visits classrooms, speaks with school leaders, and uses a rubric to evaluate how well the school is organized to support student achievement. A Quality Review rating is then given to each school along with a report that is published on its DOE website.

Under its ESEA waiver, New York state engages a somewhat different diagnostic process to support low-performing schools and districts using a program of Distinguished Educators. These highly effective educators are appointed by the commissioner to assist schools and districts whose prior intervention efforts have failed. These educators "provide an intensive review of district and school systems, structures, operations, and facilities and develop an action plan; assess the district's capacity to promote and support teaching and learning within all schools in the district; work with district administration and the board of education to review data, analyze district and school structures, plan for improvement, and assist in targeting district priorities; facilitate increased student performance across the district; and recommend administrative and operational improvements to strengthen systems" (Center for American Progress and the Council of Chief State School Officers, 2014).

Kentucky established a Program Review system to assess the quality of programs in Arts & Humanities, Writing, and Practical Living and Career Studies (Center for American Progress and the Council of Chief State School Officers, 2014).[18] Program Reviews are conducted internally at the school level three times a year by staff, parents, students, and relevant community members. An annual external review at the district level is then conducted at the end of each school year whereby district review teams are able to request and review Program Internal Review reports prepared by schools throughout the year. Kentucky also engages in a highly regarded diagnostic review process of struggling schools and districts using the AdvancED assistive technology, which has coupled a new form of accreditation with follow-up services to support school improvement.

Ohio conducts School Improvement Diagnostic Reviews (SIDRs) for schools identified as underperforming based on test data.[19] SIDRs are conducted by an external team of experienced and skilled reviewers who follow a standard protocol for collecting evidence to diagnose a school's strengths and weaknesses. SIDR teams are responsible for making prioritized recommendations that are presented to the school several weeks later in a diagnostic report. Like Ohio, as part of their ESEA flexibility waivers, a number of states are doing diagnostic review for at least some of their schools. These states include Arkansas, Florida, Illinois, Minnesota, New Jersey, Oklahoma, and Wisconsin.

Supporting School Improvement by Sharing Expertise

As part of its new accountability system, California has created the California Collaborative for Educational Excellence (CCEE). The CCEE will mobilize expertise in the state to help districts

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[17] For further details, go to http://schools.nyc.gov/Accountability/tools/review/Process/Overview/default.htm

[18] For further details, go to http://education.ky.gov/curriculum/pgmrev/Documents/Program Review Guide Section 1.pdf

[19] For further details, go to http://education.ohio.gov/getattachment/Topics/School-Improvement/Race-to-the-Top/Resources-and-Reports/RttT-Monthly-Quarterly-Reporting-November-2013.pdf.aspx

improve the quality of teaching and school leadership, and meet the needs of special populations (English learners, special education students, students at risk of dropping out). It will offer particularly intense assistance to districts or schools that are struggling to meet the goals established in the Local Control and Accountability Program, but its services will be available to schools and districts upon request. The collaborative will sponsor a *system of review* by expert educators and peers that can help build a learning system within the state to stimulate the transfer of knowledge and best practices and encourage innovation, experimentation, evaluation, and adaptation. CCEE will not only strengthen the state's capacity to assist schools and districts that need help, but also validate and share information about effective practices.

Pairing highly successful schools with other schools needing support is another means of helping schools share expertise, which has been highlighted in studies of Shanghai's extraordinarily successful school system. This strategy has been taken up by the California CORE districts, which pair high- and low-performing schools to share best practices, and help teachers at these schools work together to learn from each other. Massachusetts and Tennessee also pair high-growth schools with low-performing schools to share best practices.

Supporting Educator Capacity and Accountability

The heart of a professional accountable system is a set of elements that ensures that educators are carefully selected, receive a high-quality preparation that enables them to acquire essential knowledge and skills, are licensed based on useful evidence of effectiveness, supported through high-quality induction and professional learning opportunities, and make sound personnel decisions—including opportunities for advancement that support further sharing of expertise—through thoughtful evaluation, supervision, and career ladders. Professionally accountable systems also ensure that well-qualified educators are readily available to all students across the state, which requires attention to recruitment incentives, including service scholarships, and adequate and equitable salaries and working conditions that provide motivation to stay.

Although the nation as a whole has lost ground on this agenda during recent years of federal and state budget cuts, a number of states have taken substantial steps toward creating an integrated set of professional supports and requirements. For example, California has long had some of the most rigorous standards for entering teacher education in the nation, with nearly all candidates preparing at the graduate level, and examinations of academic skills and subject matter knowledge required for entry. The state also launched the nation's first performance assessments of teaching for licensure some years ago. California was also the first state to offer a state-funded multiyear induction program for beginning teachers. It has recently added administrator performance assessments and a required induction program for administrator licensing, as well, while overhauling its standards for teacher and administrator preparation.[20]

The new preparation standards require deeper knowledge of how to teach English learners and other students with special needs, as well as content pedagogical knowledge that incorporates the Common Core State Standards. A new accreditation system will enforce stronger standards and attend to program outcomes by collecting and reporting common data across programs—such as graduate and employer evaluations of program quality, pass rates on teacher performance assessments, and entry and retention rates in teaching—and using these to target programs for scrutiny that appear to be struggling.

[20] For more information, see information about the Commission on Teacher Credentialing at http://www.ctc.ca.gov/

When California enacted the CCSS, it allocated $1.25 billion for professional development for educators, and it is developing a range of curriculum and learning resources to support districts in this work. The state is the first in the nation to authorize and fund Peer Assistance and Review Programs to strengthen teacher evaluation statewide, and it has a long-standing statute requiring the use of teacher observations and student learning evidence in evaluations. It is now supporting districts by documenting and disseminating model programs that can share expertise across the state.

Delaware has recently raised the entry and exit requirements for teacher preparation and focused more attention on the clinical preparation candidates receive. Under SB 51, candidates must now have a 3.0 GPA or pass an academic skills test to enter teacher education. To exit, they must pass a more rigorous test of content knowledge and demonstrate effective teaching through a performance assessment (U.S. Department of Education, 2014). Teacher candidates must participate in ongoing residency experiences that include working with a cooperating teacher, participating in parent/teacher conferences and professional learning communities, and teaching students while being observed by their mentors.

Delaware's new teachers and administrators receive support and mentoring. Delaware is one of only three states that requires and funds multiyear new teacher induction and makes program completion a requirement for licensure advancement. It also is one of only five states to require 3 years of induction support. The state provides funding for mentors for beginning teachers (New Teacher Center, n.d.) and for beginning principals. A Delaware Leadership Academy at the University of Delaware offers mentoring and professional learning opportunities for principals and other school leaders (Darling-Hammond, Meyerson, LaPointe, & Orr, 2009).

The Delaware Department of Education maintains ongoing professional development opportunities for teachers through a set of approved professional development clusters; through subject matter networks like the Delaware Reading Project, Writing Project, Science Coalition, Technology Partners; and through ongoing professional learning opportunities in areas like Response to Intervention and Positive Behavior Supports. It has recently launched an initiative led by a group of accomplished teachers across the state to develop materials and supports for job-embedded professional development around the Common Core State Standards.

The state has leveraged its evaluation system to retain effective teachers and principals through the Delaware Talent Cooperative, which provides retention awards to highly effective teachers and leaders willing to work and stay in high-need schools (U.S. Department of Education, 2014). It has also leveraged its evaluation system to inform teacher and principal preparation and development through a new Evaluation Report System database (Center for American Progress and the Council of Chief State School Officers, 2014).[21]

Massachusetts has also worked to create a comprehensive system of supports and requirements for educator knowledge and skills, with high standards for entry implemented through a series of assessments of academic skills and subject matter for teacher entry and licensing; strengthened requirements for program approval; required induction programs offered by trained mentors for both beginning teachers and administrators (New Teacher Center, 2011); and recent initiatives to implement performance assessments for licensure for both teachers and administrators.

The state offers incentives for academically able candidates to prepare for teaching through a tuition waiver for aspiring teachers already in college who maintain a 3.0 grade point average and commit to teaching in a shortage field for 2 years in Commonwealth schools, along with a scholarship program, much like the highly successful North Carolina Teaching Fellows program, which attracts qualified high school students to the teaching profession by providing 4-year tuition

[21] For further details, go to http://www.americanprogress.org/wp-content/uploads/issues/2012/07/pdf/nochildwaivers.pdf

and fees scholarships (Massachusetts Department of Higher Education: Office of Student Financial Assistance, 2014).

Once in the profession, all educators maintain an individual professional development plan, and the state sponsors and funds a wide range of professional learning opportunities. The department offers free professional development institutes for teachers and administrators during the summers, focusing on understanding learning standards, promoting quality instructional practices, and helping educators develop an understanding of high-quality curriculum within subject matter fields. The state also encourages and enables teachers to access learning opportunities from universities, districts, and other sources, as well as job-embedded opportunities, such as mentoring, peer coaching, taking and offering seminars, or collaborating on new curriculum units, all of which can help fulfill recertification requirements and promote ongoing learning (Massachusetts Department of Elementary and Secondary Education, 2000).

Massachusetts's new teacher evaluation process is tightly tied to these learning opportunities. One of the more sophisticated in the nation, it draws on evidence of teaching practice from observations, staff, and student feedback; teachers' professional contributions; and multiple sources of evidence about student learning in a judgment system that is tied to goal-setting and professional learning (Massachusetts Department of Elementary and Secondary Education, 2014).

Conclusion

We offer these ideas about a new paradigm for accountability in the spirit of beginning a conversation that might ultimately result in a policy framework with the potential to allow the United States to move forward in its aspirations to educate all students for the demands of the world they are entering. We recognize that considerable discussion and debate will be needed before a new approach can take shape, and that states will differ in the specific approaches that fit their contexts and political cultures.

Nonetheless, we believe it is imperative to get this national discussion started, as the only current consensus is that our current system is not adequate to meet the needs of our schools and children, especially those in increasingly under-resourced communities.

We believe that a new conception of accountability can help the nation meet its aspirations for preparing college- and career-ready students by:

- developing assessments that are more focused on 21st century learning skills and used in ways that support improvement in teaching and learning;
- creating stronger, more multidimensional ways of evaluating schools and more sophisticated strategies for helping them improve;
- addressing the opportunity gap that has allowed inequalities in resources to deprive many students of needed opportunities to learn; and
- developing an infrastructure for professional learning and accountability (e.g., higher quality preparation, professional learning, evaluation, and career advancement for individuals, plus sharing of expertise across schools) that allows educators to acquire and share the knowledge and skills they need to enable students to learn.

The gauge of a new system should be the outcomes it enables. True accountability should allow schools to be both responsible for high-quality professional practice and responsive to students' needs within the context of their families and communities. An effective accountability system should give students, parents, and governments confidence that schools are focused on what matters most and capable of helping each child connect to a productive future.

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Appendix A

Accountability Pillar Overall Summary
Annual Education Results Reports - Oct 2008
Province: Alberta

Alberta EDUCATION

Goal	Measure Category	Measure Category Evaluation	Measure	Province			Measure Evaluation		
				Current Result	Prev Year Result	Prev 3 yr Average	Achievement	Improvement	Overall
Goal 1: High Quality Learning Opportunities for All	Safe and Caring Schools	Good	Safe and Caring	**85.1**	84.2	83.9	High	Improved Significantly	Good
	Student Learning Opportunities	Good	Program of Studies	**79.4**	78.5	77.8	High	Improved Significantly	Good
			Education Quality	**88.2**	87.6	87.1	High	Improved Significantly	Good
			Drop Out Rate	**5.0**	4.7	5.0	Intermediate	Maintained	Acceptable
			High School Completion Rate (3 yr)	**71.0**	70.4	70.0	Intermediate	Improved Significantly	Good
Goal 2: Excellence in Learner Outcomes	Student Learning Achievement (Grades K-9)	Issue	PAT: Acceptable	**75.8**	75.9	76.7	Low	Declined Significantly	Concern
			PAT: Excellence	**19.6**	19.4	19.3	Intermediate	Improved	Good
	Student Learning Achievement (Grades 10-12)	Acceptable	Diploma: Acceptable	**85.0**	85.4	85.2	Intermediate	Declined	Issue
			Diploma: Excellence	**22.3**	23.3	23.1	High	Declined Significantly	Issue
			Diploma Exam Participation Rate (4+ Exams)	**53.6**	53.7	53.2	Intermediate	Improved	Good
			Rutherford Scholarship Eligibility Rate	**38.2**	37.2	35.4	High	Improved Significantly	Good
	Preparation for Lifelong Learning, World of Work, Citizenship	Good	Transition Rate (6 yr)	**60.3**	59.5	57.1	High	Improved Significantly	Good
			Work Preparation	**80.1**	77.1	76.4	High	Improved Significantly	Good
			Citizenship	**77.9**	76.6	76.2	High	Improved Significantly	Good
Goal 3: Highly Responsive and Responsible Jurisdiction (Ministry)	Parental Involvement	Good	Parental Involvement	**78.2**	77.5	77.2	Intermediate	Improved Significantly	Good
	Continuous Improvement	Good	School Improvement	**77.0**	76.3	75.7	High	Improved Significantly	Good

Goal	Measure Category	Measure	Province		
			Current Result	Prev Year Result	Prev 3 yr Average
ACOL Measure	ACOL Measure	Satisfaction with Program Access	**69.2**	68.2	68.0
		In-service jurisdiction Needs	**80.4**	78.8	77.8

Notes:

1) Student Learning Achievement: PAT Values reported are weighted averages of PAT Acceptable and PAT Excellence results. Courses included: ELA (Grades 3, 6, 9), Math (Grades 3, 6, 9), Social Studies (Grades 6, 9), Science (Grades 6 only), French Language Arts (Grades 6, 9), Français (Grades 6, 9).

2) Student Learning Achievement: Diploma Exam Values reported are averages of Diploma Acceptable and Diploma Excellence results, weighted by the number of students enrolled in each course.

3) Overall evaluations can only be calculated if both improvement and achievement evaluations are available.

4) The ACOL measures are not evaluated as they are not part of the Accountability Pillar and are included only to enable inclusion in the AERR and 3-Year Education Plan reports.

5) Data values have been suppressed where the number of students is less than 6. Suppression is marked with an asterisk (*).

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Certifying Skills and Knowledge:

Four Scenarios on the Future of Credentials

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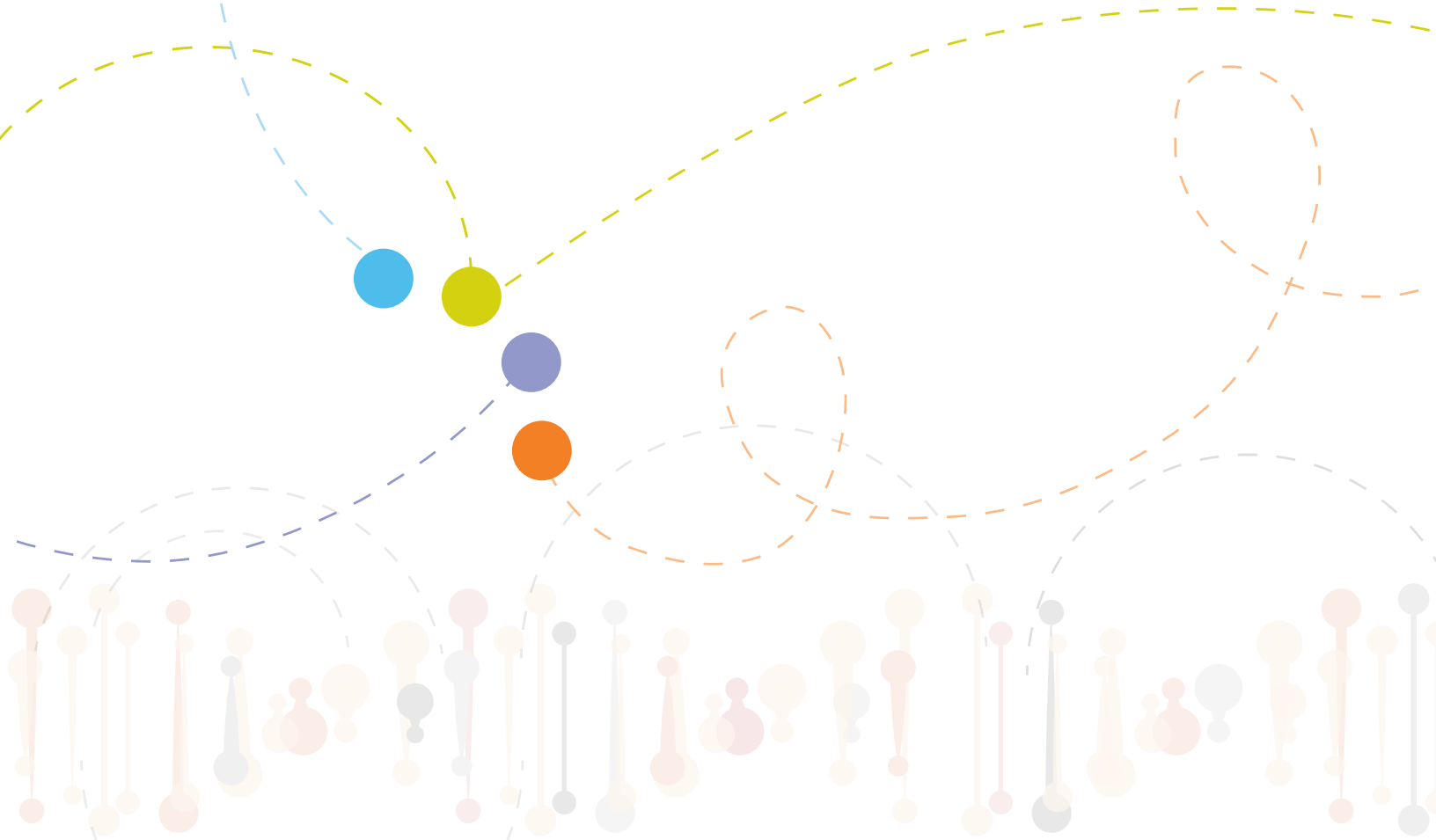


KnowledgeWorks.

Certifying Skills and Knowledge:

Four Scenarios on the Future of Credentials

Disruptions to the education system and employment sector are changing what it means to acquire knowledge and skills and also how we might credential those accomplishments. Fundamental changes in how we educate people promise to change how we credential learning. At the same time, changes to how we work could alter the value that we place on current credentials, affect how we assess and award credentials, and give rise to new forms, which could in turn have the potential to disrupt the education sector even further.

As forecast in KnowledgeWorks' *Recombinant Education: Regenerating the Learning Ecosystem* and the related infographic, "A Glimpse into the Future of Learning," education in the United States is facing a decade of deep disruption as the digital revolution and the accompanying cultural and social changes reshape its structure. These disruptions point towards a future in which education will be increasingly personalized to each learner, school will take many forms, and a variety of learning agents will guide students in their learning journeys. With education becoming increasingly learner-centered, assessment is likely to become increasingly focused on mastery instead of time, with new uses of both formative and summative assessments to inform learning.

The employment sector is also experiencing change, affecting how, when, and where people might work. Current trends are pointing towards a future of work in which people are likely to think less in terms of climbing a career ladder and more in terms of navigating a career lattice. Employment is increasingly becoming ad hoc and networked, with full-time employment for a single organization declining as employers increasingly seek talent on demand. At the same time, drivers of change such as new forms of automation, an aging workforce, mobile technologies' blurring the line between work and home life, and economic globalization are pushing employees to hold multiple careers across their lifetimes and sometimes even at the same time. Such shifts could push many people to be in a mode of constant learning and continuous career readiness and could increase the need for specialized training similar to that required for professionals such as doctors, lawyers, engineers, and scientists.

With future trends pointing toward profound shifts in the structures of both education and work, credentials could evolve considerably over the next ten years. Given the roles that credentials play as symbols of knowledge, motivators for pursuing training and education, and the primary means of gaining access to as well as navigating today's job market, it is important to consider what credentials might look like in ten years, how they might be earned, and how they might be evaluated.

Credentials
are a specific qualification issued by an authoritative third party to signify that a person has achieved a particular transferable skill set or accomplishment.

Formative assessments
monitor student learning by providing ongoing feedback. They are typically low stakes but can be a powerful tool that educators, students, and other stakeholders can use to make real-time adjustments to the learning process.

Summative assessments
evaluate student learning against a standard or benchmark. They are high stakes, meaning they have a high point value and are issued at the end of a defined educational period.

Exploring the Future of Credentials

In order to explore what credentials might look like in ten years, this paper considers four scenarios for the future of credentials:

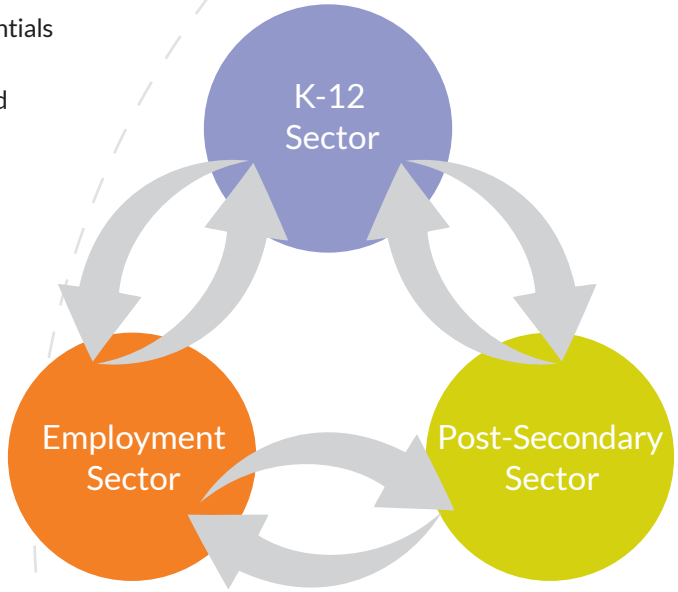
A baseline future, "All Roads Lead to Rome," imagines a future in which degrees awarded by the K-12 and post-secondary sectors still serve as the dominant form of credentials, but there are many roads toward gaining those credentials, such as diverse forms of school and educational assessments.

An alternative future, "The Dam Breaks," explores a future in which the employment sector accepts new forms of credentials, such as micro-credentials, on a standalone basis, leading to major shifts in both the K-12 and post-secondary sectors and new relationships between the academic and working worlds.

A second alternative future, "Every Experience a Credential," considers what credentials might look like if new technologies enabled every experience to be tracked and catalogued as a form of credential for both students and employees.

A wild card scenario, "My Mind Mapped," imagines a future in which breakthroughs in both the mapping and tracking of brain functions have created a new type of credential reflecting students' cognitive abilities and social and emotional skills.

The four scenarios presented in this paper represent future images of credentials based on the trajectory of current trends. The first three represent plausible futures, while the fourth scenario, "My Mind Mapped," represents a wild card scenario that is low in probability but high in impact. Each scenario in this paper reflects different drivers of change and a different set of fundamental assumptions about how changes affecting credentials might play out across the K-12, post-secondary, and employment sectors. Each of these sectors has a causal relationship to each of the others, meaning that changes in one sector can be expected to affect the other two.



It is important to note that the trajectory of drivers of change seldom stays the same over time. Trends often slow down, speed up, or even stop. Depending on the pace at which the key drivers of change unfold, each of the scenarios in this paper could become more or less plausible. Indeed, some of the scenarios might already seem more or less plausible in different settings and across the three sectors that they address.

Due to the inherent uncertainty of the future, it is unlikely that any of the four scenarios presented in this paper will turn out exactly as written. The scenarios are intended to bring to light key issues driving change in and around credentials in order to help stakeholders develop forward-looking visions for how people might attain and evaluate the quality of credentials, consider how best to leverage or otherwise respond to new and emerging forms of credentials, and develop strategies for creating credentials consistent with their visions for the future of learning.

Baseline Future

All Roads Lead to Rome

"All Roads Lead to Rome" imagines a future in which degrees awarded by the K-12 and post-secondary sectors still serve as the dominant form of credentials, but there are many roads toward gaining those credentials, such as diverse forms of school and educational assessments.

K-12 Sector

The dominant form of credentials in the K-12 sector is still the high school diploma; however, how and when students earn their diplomas has changed. Due to the increasingly personalized nature of school, some students might find themselves on a path resembling traditional high school, while other students might never enter the walls of a school, choosing to attend online schools, charter schools, homeschooling, or whatever option best suits each individual. Reflecting these multiple forms of school, multiple forms of assessment have become the norm, with a balanced system of assessments being used to improve student learning and evaluate mastery through formative, interim, and summative assessments.

While not dominant, alternative forms of credentials are increasingly joining the high school diploma on the transcripts of many high school graduates. Students use skill-tracking technologies such as the Learning Record Store (LRS) and micro-credentials such as badges to capture their learning outside of class as a way of proving that they have gone above and beyond what is being asked of them at school. While LRS systems and micro-credentials have not replaced the high school diploma, they have become important parts of a high school student's academic portfolio, helping students to stand out as they take their next steps after leaving high school. Thus, LRS systems, badges, and other micro-credentials serve to document how students have gone the "extra mile," giving additional meaning to extra-curricular activities such as volunteering.

Micro-credentials represent a specific skill or piece of knowledge that a learner has acquired at a granular level. Typically, the learner has to demonstrate the skill or knowledge to be awarded the micro-credential. Micro-credentials are often represented as digital badges.

Learning Record Store (LRS) is a system for storing and reporting learning data and experiences across all platforms. The LRS is used in conjunction with the experience application interface (xAPI), software used to capture both formal and informal instances of learning, which are then stored in the LRS. For the purpose of brevity, the term LRS will include the use of the xAPI going forward.

Baseline Future

All Roads Lead to Rome

Post-Secondary Sector

Despite rising costs for higher education, more and more people are seeking four-year degrees because an increasing number of employers require them at a minimum. As the percentage of adults with a college degree has risen, so too has pressure to stand out from other graduates. Students have responded to that pressure by seeking degrees that are highly specialized or from name-brand institutions, or by pursuing advanced degrees. Attempts at controlling higher education costs, such as credit for experience, competency-based credentials, and even state-subsidized free college classes, have front loaded the market for the four-year degree, ensuring that the bachelor's degree has kept its place as the dominant form of credential in the post-secondary sector. Such front loading has resulted in lowering the perceived value of the four-year degree, as well as giving a compulsory feel to it. When in the past a bachelor's degree increased most access into the job market, it is now all but assumed that an applicant will possess such credentials.

As in the K-12 sector, post-secondary credentials are increasingly being augmented by micro-credentials as well as by other forms of credentials such as certificates from direct training programs. These types of credentials have proven useful for graduates and job seekers to augment their existing degrees, helping graduates to stand out from the pack or maintain a mode of continuous career readiness; however, they have not replaced traditional college degrees. For those who do not possess a traditional college degree, such alternative credential paths still remain somewhat niche due to hesitancy on the side of the employment sector to accept such credentials on a standalone basis.

When in the past a bachelor's degree increased most access into the job market, it is now all but assumed that an applicant will possess such credentials.

Employment Sector

Despite highlighting a skills gap for new college graduates, the vast majority of employers remain reluctant to accept an applicant with just alternative credentials that address the gap. As a result, traditional higher education credentials still dominate the employment sector, serving as the major avenue for gaining access to the job market. Nonetheless, the employment sector utilizes alternative forms of credentials, such as micro-credentials, more widely than the K-12 and post-secondary sectors do. Alternative credentials increasingly serve to capture workplace learning, allowing employers to document training for their employees and to measure its return on investment.

LRS systems are also being used in the employment sector to record instances of both formal and informal learning. Coupled with human resources analytics, employee performance and training data that has been captured by an employee's LRS can be reviewed, analyzed, and certified as formal knowledge, creating a new type of credential out of once untrackable informal learning instances.

Baseline Future

All Roads Lead to Rome

Conclusion

The employment sector's hesitance to embrace credentials besides traditional K-12 and higher education degrees has ensured that those credentials continue to dominate the credentialing landscape. However, as education has become more learner-centered and as the cost for higher education has continued to increase dramatically, diverse paths to attaining credentials have emerged. Alternative credentials have gained acceptance as tools that students can use to distinguish themselves, employees can use as they continue to re-skill and upskill, and employers can use to track the return on investment of training. These developments, along with the use of skill-tracking systems and other new tools, have allowed for the creation of a new type of credential that brings informal learning into formal learning environments.

Key Drivers

- Rise of personalized learning models, such as competency education
- Increase in the use of competency-based assessments
- Increase in employer emphasis on four-year degrees
- Ongoing employer hesitancy to embrace micro-credentials
- Increase in the number of people seeking advanced degrees
- Rising cost of higher education
- Growing number of direct-skill programs
- Increase in programs such as early college high schools that bridge high school and college

Signals of Change

According to projections by the Bureau of Labor Statistics, "nineteen of the thirty occupations projected to grow fastest from 2012 to 2022 typically require some form of post-secondary degree," and "occupations typically requiring postsecondary education for entry generally had higher median wages ($57,770) in 2012 and are projected to grow faster (14.0 percent) between 2012 and 2022 than occupations that typically require a high school diploma or less ($27,670 and 9.1 percent)."

According to Gallup's "What America Needs to Know About Higher Education Redesign," only one in ten business leaders believes that schools are graduating students with the skills that their businesses needed, yet a report by Burning Glass entitled "Moving the Goalposts: How Demand for a Bachelor's Degree is Reshaping the Workforce" finds that employers are increasingly requiring bachelor's degrees for jobs that would not have needed them in the past.

The Obama administration has announced plans to combat the rising costs of higher education through measures such as offering college credit for prior experiences, raising Pell Grants from $5,550 per person to an estimated $5,975 by 2017, and issuing an additional 820,000 grants by 2021. In addition, some states are creating measures to help students access college more easily: in Oregon, every high school student can access at least three college-level courses at no cost to the student.

The American Museum of Natural History now offers a PhD in comparative biology and a Masters of the Art of Teaching, highlighting how learners can pursue traditional degrees in new settings.

The Department of Education has announced plans to use its regulatory waiver authority to test the impact of making Pell grants available to high school students who are taking college courses.

Alternative Future 1

The Dam Breaks

"The Dam Breaks" explores a future in which the employment sector accepts new forms of credentials, such as micro-credentials, on a standalone basis, leading to major shifts in both the K-12 and post-secondary sectors and new relationships between the academic and working worlds.

K-12 Sector

High school diplomas have diversified such that students can now work towards differing types of diplomas according to their goals. Students can choose a generalist diploma, which resembles the typical diploma of the past; an academic concentration diploma reflecting a focus similar to a college major; a career-ready diploma for students who might make the transition into the working world directly after high school; or a do-it-yourself style diploma reflecting a mix of academic and career concentrations. All of these diploma options combine traditional academics, micro-credentials, and real-world experience in ways that are appropriate to the students' goals and diploma choice.

Increased use of competency-based assessments has enabled the creation of these different types of diplomas, especially in the case of the career-ready diploma, which enables students to stack credentials to ensure that they are truly career ready. Workplace learning experiences are made particularly relevant through the help of a new kind of learning agent, an employment sector guide who is often referred to as a "career connector" or, as students put it, a "job jockey." Depending on a student's academic path, these new learning agents work for organizations in either the employment or post-secondary sector. They collaborate with schools to select promising students and steer them through their academic journeys to ensure that students meet the needs of their potential future employers. For students who choose the career diploma path, the input from the career connector often takes the form of helping to select which credentials to stack and which job experiences to seek. For students seeking further credentials from the higher education sector, the career connector also provides guidance towards certain academic concentrations.

Nanodegrees
are compact, stackable credentials aimed at giving learners a specific skill set quickly and affordably, often in a year or less.

Learning agents
are the many adults who might support learning in an expanded learning ecosystem.

Alternative Future 1

The Dam Breaks

Post-Secondary Sector

The college degree is no longer the dominant credential for those looking to enter the job market. Once employers broadened acceptance of different forms of credentials on their own merit, the market for low- to no-cost micro- and nano-credentials began to boom, breaking higher education's near-monopoly on credentialing for professional careers. High rates of tuition and a perceived lack of return on investment for traditional four-year college degrees led to a loss of students, causing the college market to contract so much that many universities and colleges closed. Only those with strong reputations, solid name recognition, or a known reputation for placement of graduates in competitive positions in the job market remained open. Likewise, the competency-based approach inherent to micro-credentials disrupted the certification process for those looking to enter the trades, causing a contraction in the number of credentialing bodies associated with them. The traditonal credentialing bodies that remain now act as certfying intermediaries, assessing an applicant's micro-credentials, such as those earned during a career path diploma, when certifying that a candidate has enough knowledge to enter a trade.

In an attempt to stay relevant and curtail falling enrollments, remaining colleges and universities now engage with employers in designing courses to address what the employment sector has labeled a "skills gap" for recent graduates. While enrollment numbers may be declining, there are still students who seek out higher education degrees. Students who follow the academic concentration diploma at the K-12 level may, with the advice of their career connectors, find themselves in the university system. In addition, the need for highly specialized training, such as that required of doctors, still draws students who are seeking entrance into highly specialized fields.

High rates of tuition and a perceived lack of return on investment for traditional four-year college degrees led to a loss of students, causing the college market to contract so much that many universities and colleges closed.

Employment Sector

Motivated by the skills gap among new graduates trying to enter the workforce, as well as by an acute awareness of the rising college costs faced by would-be employees, the employment sector has become actively involved in all levels of the formal and informal education systems. The employment sector now helps schools map competencies for the K-12 career path diploma, helping micro-credential issuers develop courses, sending representatives into the K-12 school system as guides and talent scouts in the form of career connectors, and even creating their own forms of micro credentials. Through this involvement, the employment sector has become a trusted partner in advising the K-12 and post-secondary sectors on credentials and the standards by which to issue them. Having come to play a direct hand in shaping most credentials in some fashion, the employment sector has gained some measure of assurance about applicants' qualifications.

With the quality of any given credential more clearly established and with the increasingly networked and ad hoc nature of work, it has become more and more important for applicants to distinguish themselves through the "brand of me" credential, through which they combine formal credentials and informal experiences such as internships, along with social networking, to market themselves as thought leaders. This new form of credential is largely informal in that it bears no official third-party verification. Lacking official third-party verification, the "brand of me" credential is typically backed by social reputation markers, helping to prove the statements being made by applicants about skills or experiences that might not be possible to track or for which there are no credentials and acting as a form of quality assurance. While on the surface this credential might seem similar to the professional networks of the past, such as LinkedIn, the use of reputation markers that validate the claims of the applicant has helped to formalize what in the past were informal credentials and has helped the employment industry begin to see the whole person beyond attainment of a traditional degree.

Alternative Future 1

The Dam Breaks

Conclusion

In sum, the employment sector's acceptance of a wide variety of credentials on a standalone basis has led to changes in both the K-12 and post-secondary sectors. The diverse array of credentials in the academic sectors has served to bring what were once considered fringe credentials into the mainstream, reflecting diverse learning environments, individual educational goals, and strong input from the employment sector.

Key Drivers

- Increase in the involvement by the employment sector in both the high school and higher education sectors
- Trend toward education becoming increasingly learner-centered
- Beginning diversification of educator roles
- Rise in ad hoc, network-based employment
- Increase in the awareness of a skills gap among recent college graduates
- Rising cost of higher education
- Emergence of reputation currencies and other forms of reputation markers
- Increase in the emphasis on personal branding and social media savvy as a necessity for gaining entrance into certain job fields

Signals of Change

Louisiana's **Jump Start** program offers high school students a Career Diploma, whose purpose is to indicate student preparedness for careers in Louisiana's high-growth job sectors.

Coursera has launched eighteen specializations designed to help learners master specific skills; students must apply those skills to a real-world project in order to receive certification.

Udacity's nanodegrees offer courses on technology with direct input from companies such as AT&T, SalesForce, and Google.

Contract-employment sites such as **Taskrabbit,** as well as ride-sharing services such as **Uber** and **Lyft**, rely upon reputation currency as a key component of the hiring process.

This **report** from the National Governors Association highlights how thirty-six states have put into place polices that break the connection between awarding credit and seat time.

A study conducted by Biz Library titled, **"Informal Learning: The 80/20 Rule,"** found that at least 80% of workplace learning is informal in nature.

Alternative Future 2

Every Experience a Credential

"Every Experience a Credential" considers what credentials might look like if new technologies enabled every experience to be tracked and catalogued as a form of credential for both students and employees.

K-12 Sector

As learning became more and more personalized over the last decade, educators began to look for tools to capture student learning across formal and informal education spaces. Finding promise in the skill-tracking software that had been developed in the context of workplace learning, many schools adopted it in order to capture both formal and informal learning regardless of when, where, and how it happened. Now, Learning Record Stores (LRS) are as common as books and pencils were in the past.

The wide-scale adoption of LRS systems has not only helped to make learning more personal but has also made education extremely disintermediated. The roles of both the educator and the school have greatly changed. No longer the only purveyors of information, educators have become learning guides, awash in real-time data about their students' experiences. They help to steer each student using feedback captured in the LRS system, checking the level of mastery demonstrated in the student's experiences and determining where the student is on his or her educational journey. Throughout this journey, the school helps to certify the student's experiences based on competency markers laid out by its state's department of education. Schools now have a certain amount of defined autonomy in how they certify each student's experience, in effect letting each school create assessments that are appropriate for each learner.

The move towards experience-based mastery has made credit hours and grade levels artifacts of the past.

The move towards experience-based mastery has made credit hours and grade levels artifacts of the past. While students still work towards diplomas, those diplomas are radically different than the ones earned by their parents and grandparents. Now that mastery has replaced seat time, some students pass through the K-12 system quickly, while others find that their journey takes longer. Due to this learner-centered approach to education, some students experience learning in the classroom, while others never step through the doors of their local schools. Regardless of where, when, and how they learn, all students have the experiences along their journeys toward mastery recorded.

Post-Secondary Sector

The use of LRS systems has also had a dramatic effect on the post-secondary sector. With the return on investment for the majority of post-secondary degrees declining, the sector has become a certifier of experiences much in the same way as the K-12 sector has. In partnership with the employment sector, colleges and universities have rolled out competency ladders for nanodegrees. These competency ladders allow students to demonstrate mastery step-by-step, sometimes through tests but increasingly through real-world application and experiences recorded via the LRS. These demonstrations of competency can then be clustered into what is

Every Experience a Credential

now commonly called the "nano," short for nanodegree. If a student wishes to go further in his or her academic career, he or she can stack nanodegrees to form the equivalent of bachelor's degrees and beyond. It is not uncommon to find motivated students who hold high forms of degree attainment yet have never taken an exam or written a paper. Rather, these students have clustered a set of learning experiences and paid a college or university to credential them.

If a student wishes to go further in his or her academic career, he or she can stack nanodegrees to form the equivalent of bachelor's degrees and beyond.

Similarly, students who wish to pursue a trade find their LRS records being assessed against competency ladders reflecting the trade's basic set of competencies. If the student meets the basic set of required competencies, he or she will be granted entrance into the trade. If a student does not meet the required level for entrance, he or she can enroll in a workplace training program where the student's LRS captures their progress toward the required level of competencies. Regardless of how a student enters a trade, the LRS is used to document workplace experiences throughout his or her career, helping to highlight areas of skill as well as areas that may need to be developed further.

As the once lucrative market for post-secondary education experienced a shock due to revenue contraction, the only institutions that survived were those that created a strong brand for themselves and adapted their structures accordingly. Now, certain institutions are viewed as being more competitive than others in terms of the experiences that they certify, having more stringent criteria for what experiences reflect mastery and having competency ladders that are considered more rigorous, in effect giving the certifications they offer a higher value than those from other institutions.

Even as LRS systems have reshaped the post-secondary sector and the credentials that it awards, high-stakes summative assessments still serve as gates to entering highly specialized fields such as medicine and law. These fields and their associated exams have a long history of trust behind them, in effect forming trust webs around the granting of their credentials. While students must still pass these exams to gain access to practice, the ability to monitor and track learning experiences has led to many of these exams being customized to the student. In instances where a student has displayed deep mastery of certain areas through his or her learning experiences, the summative tests concentrate on areas in which the student has not yet demonstrated mastery.

Employment Sector

The implementation of LRS systems has also affected workplace learning and professional development. Given the ability to track every experience, workplace learning is now largely informal, with the majority of employees turning to search engines and company intranets in search of answers instead of pursuing expensive and time-consuming training. Similarly, LRS systems guide professional development by providing real-time performance data that enables employers to recommend just-in-time training in whatever form is appropriate for the employee to meet his or her professional goals.

Having led the development of skill-tracking systems, the employment sector has turned its attention to using the resulting performance data in its hiring processes via sophisticated human resources analytics. These human resources analytics, or "cyber scouts" as some job seekers have taken to calling them, actively search the web for candidates with the right combinations of certified experiences and competencies for open positions. Once it finds the right combination, the cyber scout contacts the job seeker and begins the interview or vetting process.

Alternative Future 2

Every Experience a Credential

Conclusion

The ability to track anytime, anywhere, learning has changed the very notion of what it means to earn a credential. With every experience correlating to a credential, both the K-12 and post-secondary sectors have been forced to reinvent themselves as certifiers of experience. Earning credentials in either of these sectors is no longer about spending time in a chair or getting the base amount of work done; it is about demonstrating mastery. Similarly, the adoption of LRS systems has greatly changed the ways in which the employment sector develops and recruits human capital. With sophisticated human resource analytics constantly searching for job seekers with the right combinations of certified learning, experiences themselves have become the dominant credential.

Key Drivers

- Diversification of school structures
- Slow but persistent move away from seat time as a measure of learning
- Increasing emphasis on personalized learning within the formal education system
- Emergence of learning playlists in both formal and informal learning contexts
- Increasing use of stackable certificates in higher education
- Emergence of micro-credentials and nanodegrees
- Increasing adoption of Learning Record Store and other skill-tracking systems
- Increase in the use of big data in hiring

Signals of Change

- Recruiting companies such as **GILD** use algorithms to comb through open source code in order to find and recruit the best software engineers.
- Organizations such as Pandora, the National Health Service, and HealthStream have begun using **Learning Records Store** systems in order to identify correlations between learning activities and employees' job performance.
- The United States Department of Defense's **Advanced Distributed Learning project** is using Learning Record Store and xAPI as key components in its learning architecture. The project aims to provide high-quality learning and performance enhancement that is tailored to an individual's needs and is delivered at the right place and time.
- The **HIVE** Learning Networks bring together schools, libraries, museums, and other cultural institutions in Chicago, New York, Pittsburgh, and Toronto to give students opportunities to learn beyond the walls of the classroom.
- Institutions such as **Western Governor's University**, **Arizona State University**, and the **University of Wisconsin** offer competency-based higher education with credit for prior experience.

Wild Card Scenario

My Mind Mapped

"My Mind Mapped" imagines a future in which breakthroughs in both the mapping and tracking of brain functions have created a new type of credential reflecting students' cognitive abilities and social and emotional skills.

Cognitive abilities include such brain-based skills as perception, language, visual and spatial processing, memory, attention, motor skills, and executive functions.

K-12 Sector

As schools and other places of learning began to capture and analyze larger and more complex sets of data about their students, they began to use those insights to make data-driven decisions about how best to structure learning. The data uncovered individual learners' strengths and weaknesses, along with their preferred learning formats, helping to usher in personalized approaches to learning. As time progressed, advances in the understanding of the brain, coupled with ever-expanding data streams generated by students, helped to deepen educators' understanding not just of how to personalize learning, but also of how each student actually learns. Educators now have the ability to monitor a student's cognitive, social, and emotional skills, which are now referred to as their neuro-finger prints, in real time.

Nootropics, or "smart drugs," are cognitive-enhancing supplements that claim to have an effect on memory, cognition, and clarity of thought.

This newfound ability to understand a student's neuro-fingerprint changed a lot in education. In addition to designing and testing for "crystallized intelligence," or the knowledge and skills learned in school, educators now design curricula to help students develop their cognitive, social, and emotional skills. The credentials that students seek have changed as well. Rather than working towards a diploma, students now work to attain a standardized level of mastery for a core set of cognitive abilities, along with essential social and emotional skills such as determination, grit, self-control, and growth mindset. These levels are monitored in real time, with students receiving constant feedback as they move through their coursework. Once a student reaches the base level of mastery in all areas, he or she is considered a graduate of the K-12 sector. This rolling monitoring means that some students might finish their K-12 careers quickly, while others might take more time. Regardless of how long it takes, a well-developed neuro-fingerprint has become the credential.

Educator roles have diversified to reflect schools' new emphasis on monitoring the development of students' neuro-fingerprints. Neuro-fitness coaches now work hand-in-hand with students, parents, and other learning agents. Part medical professional, part educator, these neuro-fitness coaches help teachers create lessons and monitor feedback in order to stretch students' cognitive abilities. When students have extreme difficulty making progress, neuro-fitness coaches may recommend nootropics, changes in diet, mindfulness training, or mediation, to name a few options. In the case of nootropics, coaches watch for signs of "smart drug" abuse in students who may not need the boost but seek to gain an unfair advantage. Coaches also help to monitor whole-student health, being mindful of how issues such as trauma can impact a student's cognitive development and recommending ways both the school and the learner can take action to begin the healing process.

Students also engage with another new learning agent, the mind scout. Mind scouts resemble the guidance or career counselors of the past. They look at each learner's neuro-fingerprint, helping students identify an academic or career path that aligns to their goals and interests. Mind scouts use the insights provided by the learner's neuro-fingerprint to help find a path where the learner can further develop and flourish, whether that path is higher education, career training, or immediate employment.

Post-Secondary Sector

While the K-12 sector has changed dramatically, higher education institutions and other post-secondary credentialing bodies look more similar on the surface. There are still university degrees, skill-training programs, and a proliferation of alternative credentials, such as micro-credentials and nano-credentials; however, each of those credentials now reflects an ideal neuro-fingerprint profile for students who wish to pursue them. Thus, this profile augments existing credentials by layering an additional set of competencies onto existing credential structures. The neuro-fingerprint profile helps to create highly personalized pathways for attaining credentials, not only by matching a student to an ideal area of study, but also by personalizing the path to credential attainment based on how the student's mind works. This hyper-personalization has led to a better fit between students and the credential paths that they seek, helping students master skills and concepts at a deeper level.

A student who has an interest in a particular area of study but who lacks the proper neuro-fingerprint will often find the doors to that pursuit shut by admissions departments.

When applying to pursue a credential, a student or his or her mind scout will make sure that the credential itself, along with the various ways in which a student might attain that credential, match the student's neuro-fingerprint. In cases where there is not a perfect fit but there is a near match, non-cognitive levels are taken more deeply into consideration to see if factors such as determination or passion might fill in the gaps in cognitive ability. A student who has an interest in a particular area of study but who lacks the proper neuro-fingerprint will often find the doors to that pursuit shut by admissions departments. This sort of predetermination has shrunk the higher education and post-secondary certification markets. While there are a wide array of credentials available, many organizations have had to close their doors or limit their offerings due to the lack of qualified applicants.

The more stringent post-secondary credential market has also led to a high degree of nootropic abuse, as students try to gain an edge or alter their brain patterns in an attempt to gain acceptance into programs that their neuro-fingerprint may not permit. In an attempt to curtail such abuse, many credentialing organizations have a neuro-regulator on staff, trained at accessing years of neuro-fingerprint data in order to uncover possible abuse. When abuse is found, the student is removed from the program, and his or her neuro-fingerprint is flagged. Students with previous offenses are often subject to a thorough smart drug evaluation when they apply for another credentialing program.

Employment Sector

The employment sector had to retool its hiring and training practices as the ability to monitor the neuro-fingerprint became commonplace. The skills gap that employers once observed has virtually disappeared because graduates applying for jobs now display deep mastery of skills as a result of matching credential paths with neuro-fingerprints. Now, a smaller pool of applicants with higher education degrees or other forms of post-secondary credentials is highly desirable.

However, the biggest change in the employment sector has been the rise of entry-level positions and workplace training programs. In being able to see the neuro-fingerprint of applicants, the employment sector often works with mind scouts to find potential applicants who have the right neuro-fingerprint profile for the job or career path that needs filling, thereby attracting applicants who in the past might not have been able or have wanted to pursue higher education or other post-secondary credentials. These entry-level jobs have a strong workplace training element, where the employer trains and develops the employee to grow and move through the organization. In the case of temporary or ad-hoc employment, the employer has insight into an applicant's capabilities due to the neuro-fingerprint.

Wild Card Scenario

My Mind Mapped

Conclusion

The ability to monitor a student's cognitive abilities and social and emotional skills in real time has created a new form of credential in the K-12 sector, the neuro-fingerprint. This development has caused educators' roles to diversify, with new roles such as neuro-fitness coaches and mind scouts emerging. It has also altered post-secondary credentials by pairing established credentialing paths with ideal neuro-fingerprint profiles. The notion of matching a neuro-fingerprint to a job has also been embraced by the employment sector, which now offers more entry-level career paths and workplace training programs due to greater insights into how applicants think.

Key Drivers

- Increase in the use of academic performance and skill development data to support instructional decision making
- Increase in the amount of user-created data
- Increase in the sophistication and ease of use of data analysis tools
- Growing market for nootropics and other "smart drugs"
- Increase in awareness that whole-student health is an important component of academic success
- Trend in schools using curriculum to develop and measure social and emotional skills such as determination and grit
- Increase in consumer interest in the emerging neuro-fitness industry
- Increase in research and debate about whether cognitive skills can be intentionally developed

Signals of Change

Neuro fitness programs such as Quantified Mind, Lumosity, and Cognifit seek to measure and improve users' cognitive abilities.

A recent report from the Economic Policy Institute highlighted the need to address noncognitive (social and emotional) skills in education, stating that "noncognitive skills represent valuable assets with respect to both traditional school outcomes and the broader development of individuals" and calling for strategies to classify noncongitive skills in order to develop metrics for measuring them and strategies for nurturing them.

The Knights Academy in Lewisham, UK, is using the cognitive abilities test (CAT) to help set students' academic goals and prove students' capabilities. The data from the CAT helps motivate students and parents to realize that students can achieve more than perhaps their academic records are showing.

In a recent study, researchers at the University of Oregon were able to track short-term memory in near real time and predict which individuals could store memories with the highest quality or precision.

A recent paper published in Frontiers in Human Neuroscience found that cognitive training improved the brain performance of students living in poverty.

Creating the Future of Credentials

Each of these scenarios for the future of credentials reflects different ways in which the sectors involved in credentialing might assess learning and grant credentials. Each of the scenarios also shows the effects that changes in one sector might have on the others. Together, the scenarios highlight the unlikelihood for credentialing to face significant disruptions over the next decade unless employers dramatically shift their acceptance of new forms.

As you read each of these scenarios, how did you find yourself responding? Which elements made you feel hopeful? Which elements made you feel worried or fearful? Was there a scenario whose future seemed more likely? One whose future you preferred?

Being mindful of your responses, what does your ideal future look like? As you develop your vision for the future, what strategies could you use to create your ideal approach to credentialing? Where might you be able to leverage some of the key drivers included in this paper to move credentialing toward your ideal approach?

It is impossible to know how the future of credentials will unfold; however, there is little doubt that credentials will change in some way. We can see the links between the education sectors, employment, and credentials, and any shifts in one of these sectors is sure to have an effect on the others. While the acceptance of credentials by the employment sector plays a major factor in the future of credentials, there are significant changes underway in the K-12, post-secondary, and employment sectors that give occasion to think about new ways to assess for credentials, to create new forms of credentials, and to begin examining the linkages among education, work, and credentials.

As you develop your vision for the future, what strategies could you use to create your ideal approach to credentialing?

Strategic Possibilities

To help you think through the strategic possibilities presented by each of the four scenarios and begin developing your own vision and strategies for bringing it to life, here are some questions for reflection:

- How might stakeholders foster meaningful linkages among the education and employment sectors?
- How might employers change their hiring practices to include relevant credentials other than those currently in the mainstream?
- How might we begin to explore new ways of assessing learning in order to ensure that current and future forms of credentials have appropriate meaning and value?
- How might credentials diversify to reflect changes in employer needs?
- How might education stakeholders track and credential informal learning?
- What emerging forms of technology might help create new forms of credentials?
- How might stakeholders extend the use of alternative credentials such as certificates and micro-credentials?

About KnowledgeWorks

KnowledgeWorks is an Ohio-based non-profit social enterprise that works to foster meaningful personalized learning that enables every student to thrive in college, career, and civic life. KnowledgeWorks works on the ground with schools and communities through a portfolio of innovative education approaches, helps state and federal leaders establish the policy conditions necessary to prepare all students for success, and provides national thought leadership around the future of learning. To learn more about our strategic foresight work, see knowledgeworks.org/strategic-foresight.

About the Author

Jason Swanson is the Director of Strategic Foresight at KnowledgeWorks, where he helps lead the organization's research into the future of learning. Jason holds a BA in Public Policy from West Chester University and a MA in Foresight from the University of Houston and is an Emerging Fellow with the Association of Professional Futurists.

Thank You....

I would like to express my gratitude to my colleagues Judy Peppler, Katherine Prince, Matt Williams, Lillian Pace, Jesse Moyer, Sarah Jenkins, and Nancy Arnold for their feedback. I would also like to thank Mike Courtney and Alexia Noutsios for their insights and perspectives.

Responsibilities of the Education Oversight Committee under:
Fiscal Year 2015-16 General Appropriation Act
(H.3701 and H.4230 as Ratified by the General Assembly on June 23, 2015)

New Responsibilities

1. Teacher Salary Schedule Structure Study Committee (*Proviso 1.85.)*
The Department of Education is required to convene stakeholders, including Education Oversight Committee, to examine and make recommendations by November 15, 2015 regarding changes to statewide minimum state teacher salary schedule.

2. Rural Teacher Recruiting Incentive (*Proviso 1A.73.)*
CERRA is required to develop a set incentives including, but not limited to, salary supplements, education subsidies, professional development, and mentorship to be provided to classroom educators that offer instructional services in districts that have greater than a 12% average annual teacher turnover rate. The incentives and implementation are to be developed in consultation with the State Department of Education and the Education Oversight Committee.

3. Teacher Supply Study (*Proviso 1A.78)*
CERRA, in concert with the Commission on Higher Education, the Department of Education, and the EOC, to conduct a study to identify and project the number of additional teachers needed annually in public school classrooms for grades K5 through 12, for school years beginning 2017 through 2027.

4. Statewide Assessment Procurement (*Proviso 1A.79.)*
EOC at its June 2015 meeting complied with requirements by providing input to procurement

5. Evaluation of John de la Howe *(Proviso 7.6.)*
Education Oversight Committee, the Office of the Inspector General, and the Department of Education to gather information quarterly to document educational and therapeutic services to children.

Continuing Responsibilities

1. Evaluation of Full-Day 4K Evaluation

2. Evaluation of community partnerships that provide after school or summer reading camp programs

3. Implementation of South Carolina Community Block Grants for Education Pilot Programs with focus being on expanding high-quality, early childhood programs

4. Administration of EIA funds for non-state entities including SC Autism Society

5. Identification of schools eligible to participate in the Educational Credit for Exceptional Needs Children Program (ECENC)

6. Participation on K-12 Technology Initiative Committee, which includes developing a form to collect information on the amounts and uses of technology funds.

SC EDUCATION OVERSIGHT COMMITTEE
Reporting facts. Measuring change. Promoting progress.
PO Box 11867 | 227 Blatt Building
Columbia SC 29211 | WWW.SCEOC.ORG

July 17, 2015

Dear EOC Member:

Please see attached a copy of the *Student Reading Success Activity Guide*. This guide, published by the EOC, is intended to help families, tutors – *any* member of a child's success team – incorporate simple, age-appropriate activities and games into each day to help children become more proficient readers.

The EOC was able to provide copies of this guide to every South Carolina student who attended a summer reading camp in a school district this summer as well as students who attended Boys and Girls Club Summer Reading Enhancement camps administered by the SC Afterschool Alliance. Additionally, the SC State Library distributed copies to county libraries throughout the state and the United Way of the Midlands distributed copies to their education partnerships.

We thank you for your support and commitment, allowing us to produce publications which are intended to help young people and families learn the importance of taking simple steps to help children become more proficient readers.

We do have a limited number of copies of the guide still available. If you know of a school district, faith group, or another group who would benefit from receiving additional copies of this guide, please contact Dana Yow at (803) 734-6164 or danay@eoc.sc.gov.

Sincerely,

Melanie D. Barton

Melanie D. Barton

Student Reading Success
Activity Guide

A guide designed for Student Success Teams (families, caregivers, tutors, teachers, etc.) working with young children in Kindergarten-3rd grade

SC EDUCATION OVERSIGHT COMMITTEE
Reporting facts. Measuring change. Promoting progress.

Student Reading Success
Activity Guide

Dear Student Success Team Member,

Thank you for your important work! Reading with young children is a **proven way** to promote early literacy. Helping to make sure children are reading on grade level by third grade is one of the most important things we can do to prepare children for a successful future. **Reading with a child for 20 minutes per day and making a few simple strategies a part of your daily routine can make a positive impact on a child's success in school.**

The SC Education Oversight Committee is happy to provide you with this Student Reading Success Activity Guide, which includes age-appropriate games to help children become more proficient readers! We are grateful to the SC General Assembly which allows our agency the ability to produce publications like this for the public through innovative partnerships designed to increase student achievement *(2014-15 Appropriations Act, Proviso 1A.53)*.

Sincerely,

David Whittemore, Chairman
SC Education Oversight Committee

Dr. Danny Merck, Vice Chairman
SC Education Oversight Committee

Phonemic Awareness

Phonemic awareness is the ability to hear and distinguish sounds. This includes:

- **Recognizing sounds, alone and in words**
- **Adding sounds to words**
- **Taking apart words and breaking them into their different sounds**

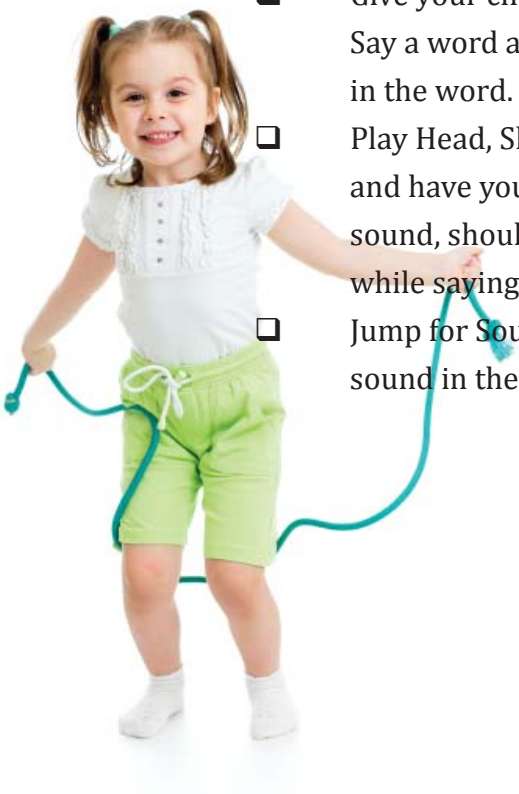
Activities—
Kindergarten - 1st Grade

- ❑ Play "I Spy" with your child, but instead of giving a color say, "I spy something that starts with /b/." or "I spy something with these sounds, /d/ /ŏ/ /g/." Have your child do the same.
- ❑ Play a game in which you say a word and your child has to break apart all the sounds. Ask your child to stretch out a word like dog and he/she can pretend to stretch a word using their hands. Your child should say /d/ /ŏ/ /g/.

- ❑ Play the "Silly Name Game". Replace the first letter of each family member's name with a different letter. For example, 'Tob' for 'Bob', 'Watt' for 'Matt', etc. Have the child identify the beginning letter/sound.
- ❑ Say a sentence aloud and ask your child to determine how many words were in the sentence.
- ❑ Explain that rhymes are words that sound the same at the end.
- ❑ Read books over and over again containing rhymes.
- ❑ As you read, have your child complete the rhyming word at the end of each line.
- ❑ Orally provide pairs of words that rhyme and pairs that do not rhyme (EX; pan/man; pat/boy). Ask, "Do 'pan' and 'man' rhyme? Why? Do 'pat' and 'boy' rhyme? Why not?"
- ❑ Prompt your child to produce rhymes. Ask, "Can you tell me a word that rhymes with 'cake'?"
- ❑ Sing rhyming songs like "Row, Row, Row Your Boat" or "Twinkle, Twinkle Little Star".
- ❑ Give your child a small car (such as a Matchbox car). Write a 3-4 letter word on a piece of paper with the letters spaced apart. Have your child drive the car over each letter saying the letter sound. Have your child begin driving the car slowly over the letters and then drive over them again slightly faster. Continue until the word is said at a good rate.

Activities—Kindergarten - 1st Grade

- ❑ To help your child separate (segment) sounds in words:
  - ❑ Give your child 3-5 blocks, beads, bingo chips, or similar items. Say a word and have your child move an object for each sound in the word.
  - ❑ Play Head, Shoulders, Knees and Toes with sounds. Say a word and have your child touch his/her head for the first sound, shoulders for the second sound, and knees for the third while saying each sound.
  - ❑ Jump for Sounds. Say a word and have your child jump for each sound in the word while saying the sound.



Activities—2nd Grade - 3rd Grade

- ❑ Demonstrate clapping a word into its syllables. Ask your child to clap words into syllables.
- ❑ Make tally marks for the number of syllables in the names of people in your family, favorite foods, etc.
- ❑ Give your child a small car (such as a Matchbox car). Write a 5+ letter word on a piece of paper with the letters spaced apart. Have your child drive the car over each letter saying the letter sound. Have your child begin driving the car slowly over the letters and then drive over them again slightly faster. Continue until the word is said at a good rate.
- ❑ To help your child segment (separate) sounds in words:
  - ❑ Give your child 4-7 blocks, beads, bingo chips or similar items. Say a word and have your child move an object for each sound in the word.
  - ❑ Play Head, Shoulders, Knees and Toes with sounds. Say a word and have your child touch his/her head for the first sound, shoulders for the second sound, and knees for the third while saying each sound.
  - ❑ Jump for Sounds. Say a word and have your child jump for each sound in the word while saying the sound.

Phonics

Phonics is the ability to understand the relationship between letters and the sounds they represent. This includes:

- **Recognizing letter combinations that represent sounds**
- **Syllable patterns**
- **Word parts (prefixes, suffixes, and root words)**

Common Consonant Digraphs (a pair of letters representing a single speech sound) and Blends:
bl, br, ch, ck, cl, cr, dr, fl, fr, gh, gl, gr, ng, ph, pl, pr,
qu, sc, sh, sk, sl, sm, sn, sp, st, sw, th, tr, tw, wh, wr
Common Consonant Trigraphs (three letters spelling one consonant or vowel): nth, sch, scr, shr, spl, spr, squ, str, thr
Common Vowel Digraphs:
ai, au, aw, ay, ea, ee, ei, eu, ew, ey, ie, oi, oo, ou, ow, oy

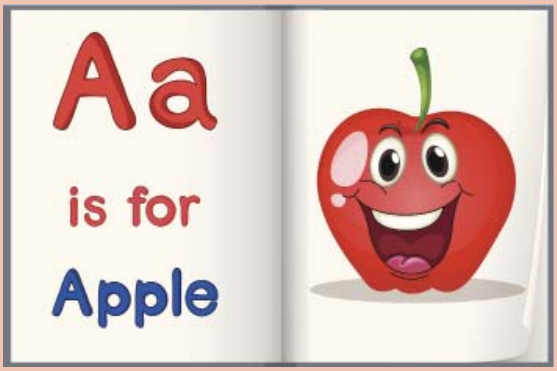
Activities—Kindergarten - 1st Grade

- ❑ Make letter-sounds and have your child write the letter or letters that match the sounds.
- ❑ Play word games that connect sounds with syllables and words. (for example, if the letters "p-e-n" spell pen, how do you spell hen?).
- ❑ Write letters on cards. Hold up the cards one at a time and have your child say the sounds (for example, the /d/ sound for the letter d).
- ❑ Teach your child to match the letters in his/her name with the sounds in his/her name.
- ❑ Point out words that begin with the same letter as your child's names (for example, John and jump). Talk about how the beginning sounds of the words are alike.
- ❑ Use alphabet books and guessing games to give your child practice in matching letters and sounds. A good example is the game, "I am thinking of something that starts with /t/.
- ❑ Write letters on pieces of paper and put them in a paper bag. Let your child reach into the bag and take out letters. Have your child say the sounds that match the letters.
- ❑ Take a letter and hide it in your hand. Let your child guess in which hand is the letter. Then show the letter and have your child say the letter name and make the sound (for example, the letter m matches the /m/ sound as in man).
- ❑ Make letter-sounds and ask your child to draw the matching letters in cornmeal or sand.
- ❑ Take egg cartons and put a paper letter in each slot until you have all the letters of the alphabet in order. Say letter-sounds and ask your child to pick out the letters that match those sounds.
- ❑ Building words - Using magnetic letters, make a three letter word on the refrigerator (cat). Have your child read the word and use it in a sentence. Every day, change one letter to make a new word. Start by changing only the beginning letter (cat, bat, hat, sat, mat, rat, pat). Then change only the ending letter (pat, pal, pad, pan). Finally, change only the middle letter (pan, pen, pin, pun).

Activities—Kindergarten - 1st Grade

- ❑ Making words - For this game, you will need magnetic letters and three bags. Put half of the consonants into the first bag. Put the vowels into the middle bag, and put the remaining consonants into the last bag. Have your child pull one letter from the first bag. That will be the first letter of their word. Then have your child pull from the vowel bag for the second letter of the word and from the other consonant bag for the third letter of the word. Next, the child will read the word and decide if it is a real word or a nonsense word. Take turns, replacing the vowels as needed until there are no more consonants left.
- ❑ Labeling words - When reading with your child, keep Post-it notes handy. Every so often, have your child choose one object in the picture and write the word on a Post-it. Put the note in the book to read each time you come to that page.
- ❑ Practicing words with pictures - Choose pictures from a magazine or catalog. Say the name of the picture, have your child say the sound that the picture begins with and the name of that letter.
- ❑ Hunting for words - Choose a letter and have your child hunt for five items beginning with that letter sound. As each object is found, help your child write the word on a list. For example, if the target sound is "m", the child might find and write mop, mat, Mom, money, and microwave.
- ❑ Teach your child to recognize the letters in his or her name.

Hints for helping your child sound out words



- First Sound - Have your child say the first sound in the word and make a guess based on the picture or surrounding words. Double-check the printed word to see if it matches the child's guess.
- Sound and Blend - Have your child say each sound separately (sss aaa t). This is called "sounding it out", and then say the sounds together (sat). This is "blending".
- Familiar Parts - When your child starts reading longer words, have him notice the parts of the word that he already knows. For example, in a word such as "presenting", your child may already know the prefix pre-, the word "sent," and the word ending -ing.

Activities—Kindergarten - 1st Grade

- ❑ Use magnetic letters to spell words on the refrigerator or spell names of family members and friends.
- ❑ Discuss how names are similar and different.
- ❑ Recognizing shapes is the beginning of recognizing the features of letters. Have your child sort letters by tall tails, short tails, hooks, humps, and circles. Your child can continue to sort by feature combinations as well (Ex: circles and tall tails, hooks and circles, humps and tall tails, etc.)
- ❑ Ask your child to name stores, restaurants, and other places that have signs. This is called environmental print. Have your child cut the images of these signs from bags, take-out containers, and fliers and post them somewhere to make an Environmental Print Word Wall.
- ❑ Ask your child to look through ads to point out things he/she recognizes. Ask if they know any of the letters on the page.

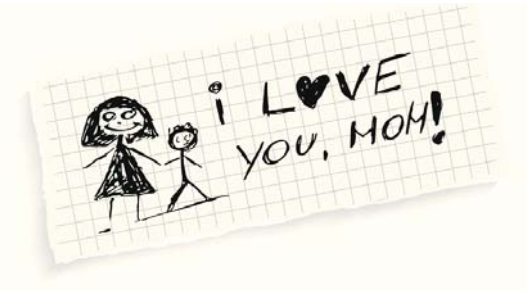
- ❑ Use stores as an opportunity for learning! Ask questions like, "Can you find something that has a letter C? Can you find a word that begins with an M? Can you find something with 4 letters?" Praise all efforts and keep it like a game.

- ❑ Make alphabet letters out of Play-doh®.
- ❑ Write letters with your finger on your child's back and have them guess the letter. Have your child do the same to you.
- ❑ Play "Memory" or "Go Fish" using alphabet cards.

- ❑ Read alphabet books to your child and eventually ask him/her to name the items on the page that you know he/she can successfully tell you.

Activities—2nd Grade - 3rd Grade

- ❑ Make blend-sounds and have your child write the letters that match the sounds.
- ❑ Play word games that connect sounds with syllables and words (for example, if the letters "l-a-t-e-r" spell later, how do you spell hater? How many syllables are in later?).
- ❑ Write vowel and consonant digraphs, trigraphs, and blends on cards. Hold up the cards one at a time and have your child say the sounds (for example, the long e sound /ē/ for the vowel digraphs ea and ee).
- ❑ Writing words - Many children love to send and receive notes, and writing is a great way to reinforce phonics skills. Send your child notes in his/her backpack or place notes on the pillow. Have a relative or friend send a letter or email to your child. Whenever your child receives a note, have him/her write back. Don't be concerned about spelling. Instead, have your child sound out the words to the best of his/her ability.



- ❑ Hunting for words - Choose a blend and have your child hunt for five items beginning with that sound. As each object is found, help your child write the word on a list. For example, if the target sound is "bl", the child might find and write blanket, blood, blue, blizzard, blast.
- ❑ Play “Memory” or “Go Fish” using consonant and vowel digraphs, trigraphs, and blends. Common vowel digraphs in English include ai (as in rain), ay (day), ea (teach), ea (bread), ea (break), ee (free), ei (eight), ey (key), ie (piece), oa (road), oo (book), oo (room), ow (slow), and ue (true). Common consonant digraphs in English include ch (as in church), ch (school), ng (king), ph (phone), sh (shoe), th (then), th (think), and wh (wheel).

Hints for helping your child sound out words

- First Sound - Have your child say the first sound in the word and make a guess based on the picture or surrounding words. Double-check the printed word to see if it matches the child’s guess.
- Sound and Blend - Have your child say each sound separately (sss aaa t). This is called “sounding it out”, and then say the sounds together (sat). This is “blending”.
- Familiar Parts - When your child starts reading longer words, have him notice the parts of the word that he already knows. For example, in a word such as “presenting”, your child may already know the prefix pre-, the word “sent,” and the word ending -ing.

Fluency

Fluency is the ability to read with sufficient speed to support understanding. This includes:

- **Automatic word recognition**
- **Accurate word recognition**
- **Use of expression**

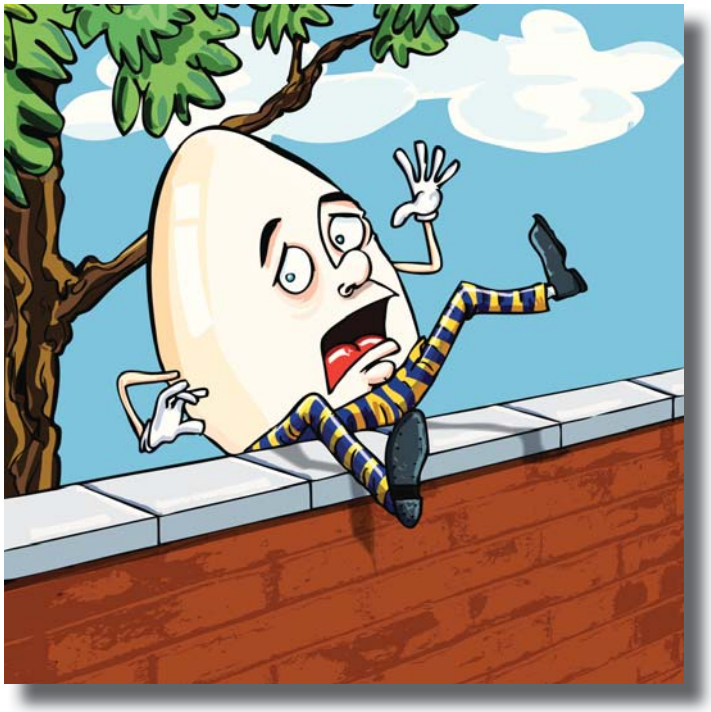
Activities—Kindergarten -1st Grade

- ❑ Repeated reading - Choose a passage that will not be very difficult for your child. Read the passage aloud to your child, and then read it together, helping your child figure out any tricky words. Next, have your child read the passage to you with a focus on accuracy. Finally, have your child read the passage to you again, paying attention to fluency and expression. The goal is to sound smooth and natural.
- ❑ Use different voices - When reading a familiar story or passage, try having your child use different voices. Read the story in a mouse voice, cowboy voice, or a princess voice. This is another way to do repeated reading, and it adds some fun to reading practice.

- ❑ Read to different audiences - Reading aloud is a way to communicate to an audience. When a reader keeps the audience in mind, he/she knows that his reading must be fluent and expressive. Provide a variety of opportunities for your child to read to an audience. Your child can read to stuffed animals, pets, siblings, neighbors, grandparents - anyone who is willing to listen. This is a good way to show off what was practiced with repeated reading.
- ❑ Record the reading - After your child has practiced a passage, have him/her record it with a tape player, phone, or MP3 device. Once recorded, your child can listen to his reading and follow along in the book. Often, he/she will want to record it again and make it even better!
- ❑ When you read a story, use appropriate expression during dialogue. Encourage your child to mimic your expression. Talk with him/her about what that expression means. Ex: If the character is excited about going to the park, he/she should sound like that in his/her voice. Encourage your child to repeat key phrases or dialogue.
- ❑ Recite nursery rhymes and poems to build familiar phrases in speech.
- ❑ In a repetitive text, ask your child to repeat the familiar phrase with you. Ex: For the story, "The House that Jack Built" your child can recite with you " in the house that Jack built."

Activities—Kindergarten -1st Grade

- ❑ When you read a story, use appropriate expression during the speaking parts (dialogue). Encourage your child to copy your expression. Talk with him/her about what that expression means. Ex: If the character is excited about going to the park, he/she should sound like that in his/her voice. Encourage your child to repeat key phrases or dialogue.
- ❑ Point out punctuation marks that aid in expression such as question marks, exclamation points and quotation marks. Demonstrate how your voice changes as you read for each. Only focus on one during a book. Remember it is important to enjoy it first and foremost.
- ❑ Encourage child to sing favorite songs and repeat favorite lines of songs.
- ❑ Make your own books of favorite songs for child to practice "reading". This builds confidence and helps your child identify him/herself as a reader.
- ❑ Say a sentence to your child and ask him/her to repeat it to you. Challenge your child to increase the number of words he/she can repeat. As you say it, put it in meaningful phrases. Ex: The boy went/ to the store /with his mother.
- ❑ Alternate repeating the favorite lines of a poem or nursery rhyme with your child. He/ she will mimic your phrasing and expression.



Activities—2nd Grade - 3rd Grade

- Repeated reading - Choose a passage that will not be very difficult for your child. Read the passage aloud to your child, and then read it together, helping your child figure out any tricky words. Next, have your child read the passage to you with a focus on accuracy. Finally, have your child read the passage to you again, paying attention to fluency and expression. The goal is to sound smooth and natural.
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- Make your own books of favorite songs for child to practice "reading". This builds confidence and helps your child identify him/herself as a reader.
- Alternate repeating the favorite lines of a poem with your child. He/ she will mimic your phrasing and expression.

Vocabulary

Vocabulary is students' knowledge of and memory for word meanings.
This includes:

- **Receptive Vocabulary — words we understand when read or spoken to us**
- **Expressive vocabulary — words we know well enough to use in speaking and writing**

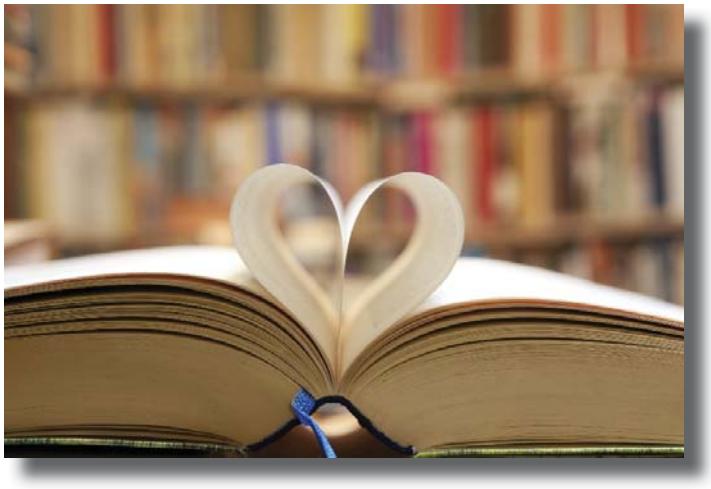
Activities—Kindergarten - 1st Grade

- ❑ Read aloud - Continue to read aloud to your child even after he is able to read independently. Choose books above your child's level because they are likely to contain broader vocabulary. This way, you are actually teaching him new words and how they are used in context.
- ❑ Preview words - Before reading to or with your child, scan through the book, choose two words that you think might be interesting or unfamiliar to your child. Tell your child what the words are and what they mean. As you read the book, have your child listen for those words.
- ❑ Hot potato (version 1) - Play hot potato with synonyms. Choose a word, and then your child has to think of another word that means the same thing. Take turns until neither player can think of another word. For example, you may say, "Cold," and your child might say, "Freezing." Then you could say, "Chilly," and so on. Try the game again with antonyms (opposites).
- ❑ Hot potato (version 2) - Play hot potato with categories. For younger children, the categories can be simple: pets, clothes, family members. For older children, the categories can be quite complex: The Revolutionary War, astronomy, math terms.

- ❑ Word Collecting - Have each family member be on the look out for interesting words that they heard that day. At dinner or bedtime, have everyone share the word they collected and tell what they think it means. If the child shares an incorrect meaning, guide him/her to the correct meaning. Try to use some of the words in conversation.
- ❑ Introduce your child to a variety of experiences to help build background knowledge he/she can use while making sense of print by taking them to the park, museums, the zoo, etc.
- ❑ Play "categories" with your child. Name a topic such as "farms" and ask your child to think of all the words he/she can related to that topic. This is a great way to build word knowledge!
- ❑ Discuss opposites (antonyms).

Activities—Kindergarten - 1st Grade

- ❑ Discuss positional words such as beside, below, under, over, etc. Make it into a game at dinner by asking your child to place his/her fork in different places in relation to his/her plate. Ex: Put your fork above your plate.
- ❑ Use the language of books such as author, title, illustrator, title page, etc.
- ❑ Discuss ordinal words such as first, last, beginning, middle, etc.
- ❑ Talk about how things are similar/alike as well as how things are different. Ex: How is a dog like a cat? How is a dog different from a cat?
- ❑ Use a variety of words to describe feelings and emotions. For example, your child says he/she is happy. You can validate that by saying, "I'm so glad you are so joyful today! You sure look happy!"
- ❑ Trips to everyday places build vocabulary. Discuss what you are doing and seeing as you are going through the store, for example. "I'm here in the bakery. I can find donuts, cookies, and bread." Ask your child, "What else do you think I could find here?"
- ❑ When you read a book about a topic, ask him/her to tell you all the words related to it. Ex: If you read a book about a dog, he/she might say dog, puppies, toy, food, play, leash. Add other words to help expand upon what he/she says.
- ❑ When you read a book, ask your child to identify categories for words he/she has read. Ex: If you read a book about pumpkins, you could put the words pumpkin, leaf, stem, and seeds into a category about the parts of a plant.



Activities—2nd Grade - 3rd Grade

- ❑ Read aloud - Continue to read aloud to your child even after he is able to read independently. Choose books above your child's level because they are likely to contain broader vocabulary. This way, you are actually teaching him new words and how they are used in context.
- ❑ Preview words - Before reading to or with your child, scan through the book, choose two words that you think might be interesting or unfamiliar to your child. Tell your child what the words are and what they mean. As you read the book, have your child listen for those words.
- ❑ Hot potato (version 1) - Play hot potato with synonyms (words with similar meanings). Choose a word, and then your child has to think of another word that means the same thing. Take turns until neither player can think of another word. For example, you may say, "Cold," and your child might say, "Freezing." Then you could say, "Chilly," and so on. Try the game again with antonyms (opposites).
- ❑ Hot potato (version 2) - Play hot potato with prefixes or suffixes. The prefixes dis-, ex-, mis-, non-pre-, re-, and un- are common. Common suffixes include -able/-ible, -ed, -er, -est, -ful, -ish, -less, -ly, -ment, and -ness.
- ❑ Hot potato (version 3) - Play hot potato with categories. For younger children, the categories can be simple: pets, clothes, family members. For older children, the categories can be quite complex: The Revolutionary War, astronomy, math terms.
- ❑ Word Collecting - Have each family member be on the look out for interesting words that they heard that day. At dinner or bedtime, have everyone share the word they collected and tell what they think it means. If the child shares an incorrect meaning, guide him/her to the correct meaning. Try to use some of the words in conversation.
- ❑ Play "categories" with your child. Name a topic such as "ecosystems" and ask your child to think of all the words he/she can related to that topic. This is a great way to build word knowledge!
- ❑ When you read a book about a topic, ask him/her to tell you all the words related to it. Ex: If you read a book about dinosaurs, he/she might say Tyrannosaurus Rex, paleontologist, herbivore, carnivore, fossil. Add other words to help expand upon what he/she says.

Comprehension

Comprehension is the ability to understand and draw meaning from text.
This includes:
- Paying attention to important information
- Understanding specific meanings in text
- Identifying the main idea
- Verbal responses to questions
- Using new information gained through reading

Activities—Kindergarten -1st Grade

- ❑ Sequencing errands - Talk about errands that you will run today. Use sequencing words (sequence, first, next, last, finally, beginning, middle, end) when describing your trip. For example, you might say, "We are going to make three stops. First, we will go to the gas station. Next, we will go to the bank. Finally, we will go to the grocery store."
- ❑ Every day comprehension - Ask your child who, what, when, where, why, how questions about an event in his/her day. For example, if your child attended a party, you could ask, "Who was there? What did you do? When did you have cake? Where did you go? Why did the invitation have dogs on it? How did the birthday child like the presents?" Once your child is comfortable answering these questions about his/ her experiences, try asking these questions about a book you've read together.
- ❑ Think aloud - When you read aloud to your child, talk about what you are thinking. It is your opportunity to show your child that reading is a lot more than just figuring out the words. Describe how you feel about what's going on in the book, what you think will happen next, or what you thought about a character's choice.

Reading Fiction

- ❑ Before reading - Point out the title and author. Look at the picture on the cover and ask, "What do you think is going to happen in this story? Why?" This will help your child set purpose for reading.
- ❑ During reading - Stop every now and then to ask your child to tell you what has happened so far or what he/she predicts will happen. You might also ask for your child's opinion. "Do you think the character did the right thing? How do you feel about that choice?" Explain any unfamiliar words.
- ❑ After reading - Ask your child to retell the story from the beginning, and ask for opinions, too. "What was your favorite part? Would you recommend this to a friend?"

Reading Nonfiction

- ❑ Before reading - Point out the title and author. Look at the picture on the cover and ask, "What do you think you'll learn about in this book? Why?" This helps your child consider what he already knows about the topic. Look at the table of contents. You and your child may choose to read the book cover to cover or go directly to a certain chapter.
- ❑ During reading - Don't forget the captions, headings, sidebars, or any other information on the page. Young readers tend to overlook these, so it's a good idea to show that the author includes lots of information in these "extras".
- ❑ After reading - Ask your child, "What was it mostly about? What do you still want to know? Where could you find out?"

Other Ideas

- ❑ Before your child reads a story, read the title and look at the cover. Ask, "What do you think will happen in the story?"
- ❑ Take a quick "book look" and encourage your child to talk about what he/she thinks about what might happen in the story.
- ❑ As your child reads, ask questions that start with who, what, where, when, why, and how. If your child does not answer with an appropriate response, redirect by saying, "I think you mean a person because it was a "who" question" then restate the question.
- ❑ After you read a few pages, ask "What do you think will happen next?'
- ❑ Ask your child to talk about the beginning, middle and end of the story. You will need to model this several times first.
- ❑ Discuss words related to stories such as characters, problem, and solution. For example, "How did characters of the Three Bears solve the problem of the porridge being too hot?" If the child does not know, show the picture or reread the page.
- ❑ After reading, ask your child, "What was your favorite part? Show me. Why do you like that part?"
- ❑ Ask questions about character traits. Ex: "Which character do you think was kind? Which character was bossy? How do you know?" If your child doesn't know, give your answer. You may need to do this many times before your child can do it. He/she may also "mimic" your answer. Encourage your child's attempts.
- ❑ Encourage deeper thinking by asking, "If the story kept going, what do you think would happen next?"
- ❑ Help your child make connections to his/her life experience while reading. You could say, "Is there anything you read in the story that reminds you of something? The boy who went to the zoo with his family reminds me of when we went to the zoo over the summer. What do you think?"
- ❑ As you are reading, think out loud to your child. Ask questions such as "I wonder why the boy is crying in the picture? Will he find his lost toy?" This demonstrates that reading and comprehension is an active process, not passive.
- ❑ Make puppets to help your child retell a favorite story or use stuffed animals as props to retell a story or part of a favorite story.

Activities—2nd Grade - 3rd Grade

- ❑ Sequencing comics - Choose a comic strip from the Sunday paper. Cut out each square and mix the squares up. Have your child put them in order and describe what is happening. Encourage your child to use words like first, second, next, finally, etc.
- ❑ Every day comprehension - Ask your child who, what, when, where, why, how questions about an event in his/her day. Once your child is comfortable answering these questions about his/ her experiences, try asking these questions about a book you've read together.

Reading Fiction

- ❑ Before reading - Point out the title and author. Look at the picture on the cover and ask, "What do you think is going to happen in this story? Why?" This will help your child set purpose for reading.
- ❑ During reading - Stop every now and then to ask your child to tell you what has happened so far or what he/she predicts will happen. You might also ask for your child's opinion. "Do you think the character did the right thing? How do you feel about that choice?" Explain any unfamiliar words.
- ❑ After reading - Ask your child to retell the story from the beginning, and ask for opinions, too. "What was your favorite part? Would you recommend this to a friend?"

Reading Nonfiction

- ❑ Before reading - Point out the title and author. Look at the picture on the cover and ask, "What do you think you'll learn about in this book? Why?" This helps your child consider what he already knows about the topic. Look at the table of contents.
- ❑ During reading - Don't forget the captions, headings, sidebars, or any other information on the page. Young readers tend to overlook these, so it's a good idea to show that the author includes lots of information in these "extras".
- ❑ After reading - Ask your child, "What was it mostly about? What do you still want to know? Where could you find out?"

Other Ideas

- ❑ Discuss words related to stories such as characters, problem, and solution. For example, "How did the Wright Brothers find a solution to help their plane fly longer?" If the child does not know, show the picture or reread the page.
- ❑ Ask questions about character traits. Ex: "Which character do you think was kind? Which character was bossy? How do you know?" If your child doesn't know, give your answer. You may need to do this many times before your child can do it.
- ❑ Encourage deeper thinking by asking, "If the story kept going, what do you think would happen next?"
- ❑ Help your child make connections to his/her life experience while reading. You could say, "Is there anything you read in the story that reminds you of something?"

Reach Out & Read®
where great stories begin™

MILESTONES OF EARLY LITERACY DEVELOPMENT

NEWBORN TO 6 MONTHS

TALK, READ, SING, PLAY Right from birth, babies are listening, looking, and learning. So find, and enjoy, those everyday moments when you can talk, read, sing, and play together with your baby.

	6 TO 12 MONTHS	12 TO 24 MONTHS	2 TO 3 YEARS	3 TO 4 YEARS	4 TO 5 YEARS
MOTOR DEVELOPMENT *What your child is doing*	holds head steady sits in lap without support grasps book, puts in mouth drops, throws book	holds and walks with book no longer puts book in mouth right away turns board book pages	learns to turn paper pages, 2 to 3 pages at a time starts to scribble	turns pages one at a time, and from left to right sits still for longer stories scribbles and draws	starts to copy letters and numbers sits still for even longer stories
COMMUNICATION AND COGNITION *What your child is saying and learning*	smiles, babbles, coos likes and wants your voice likes pictures of baby faces begins to say "ma", "ba", "da" responds to own name pats picture to show interest	says single words, then 2- to 4-word phrases gives book to adult to read points at pictures turns book right-side up names pictures, follows simple stories	adds 2-4 new words per day names familiar objects likes the same book again and again completes sentences and rhymes in familiar stories	recites whole phrases from books moves toward letter recognition begins to detect rhyme pretends to read to dolls and stuffed animals	can listen longer recognizes numbers, letters can retell familiar stories can make rhymes learning letter names and sounds
ANTICIPATORY GUIDANCE *What parents can do* **Ask questions and *wait* for your child to answer** **Read and speak in your first language**	talk back and forth with your baby; make eye contact cuddle, sing, talk, play, read point at and name things: nose, ball, baby, dog… follow baby's cues for "more" or "stop" play games such as "peek-a-boo" or "pat-a-cake"	smile and answer when your child speaks or points let your child help turn the pages; keep naming things use books in family routines: naptime, playtime, bedtime; on the potty; in the car, bus use books to calm or distract your child while waiting	ask *"Where's the dog?"* or *"What is that?"* be willing to read the same book again and again as you read, talk about the pictures keep using books in daily routines	ask *"What happens next?"* in familiar stories point out letters, numbers point out words and pictures that begin with the same sound together, make up stories about the pictures	relate the story to your child's own experiences let your child see *you* read ask your child to tell the story encourage writing, drawing point out the letters in your child's name
			LET YOUR CHILD CHOOSE WHICH BOOK TO READ. FIND STORIES ABOUT THINGS YOUR CHILD LIKES.		
WHAT TO READ	board and cloth books; books with baby faces; nursery rhymes	board books; rhyming books; picture books; books that name things	rhyming books; picture books that tell stories; search and find books	picture books that tell longer stories; counting and alphabet books	fairy tales and legends; books with longer stories, fewer pictures

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INDICADORES DEL DESARROLLO INICIAL DE LA LECTOESCRITURA

RECIÉN NACIDO A 6 MESES

HABLEN, LEAN, CANTEN, JUEGUEN Ya desde que nacen, los bebés escuchan, miran y aprenden. Entonces, busque y disfrute esos momentos cotidianos en los que puede hablar, leer, cantar y jugar junto con su bebé.

	6 A 12 MESES	12 A 24 MESES	2 A 3 AÑOS	3 A 4 AÑOS	4 A 5 AÑOS
DESARROLLO MOTRIZ ***Qué hace su hijo***	sostiene bien la cabeza se sienta en el regazo sin ayuda sujeta el libro, se lo lleva a la boca deja caer o arroja los libros	sostiene el libro y camina con él no se lleva el libro a la boca enseguida voltea las páginas de libros de cartón	aprende a voltear las páginas de papel, 2 a 3 páginas a la vez empieza a hacer garabatos	voltea las páginas una a la vez y de izquierda a derecha se queda sentado sin moverse con cuentos más largos garabatea y dibuja	empieza a copiar letras y números se queda sentado sin moverse con cuentos más largos aun
COMUNICACIÓN Y CONOCIMIENTO ***Qué dice y aprende su hijo***	sonríe, balbucea, gorjea le gusta su voz y desea escucharla le gustan las imágenes de las caras de bebés empieza a decir "ma", "ba", "da" responde a su propio nombre palmea las imágenes en el libro para mostrar interés	dice palabras sueltas, luego frases de 2 a 4 palabras le da el libro al adulto para que lo lea señala las imágenes voltea el lado correcto del libro hacia arriba nombra imágenes, sigue historias sencillas	aprende 2 a 4 palabras nuevas por día nombra objetos familiares le gusta el mismo libro una y otra vez completa oraciones y rimas en historias conocidas	recita frases enteras de libros empieza a reconocer las letras empieza a detectar la rima juega a leerles a muñecos y peluches	puede escuchar durante más tiempo reconoce números y letras puede repetir cuentos conocidos puede hacer rimas aprende los nombres y los sonidos de las letras
ORIENTACIÓN ANTICIPATORIA ***Qué pueden hacer los padres*** **Haga preguntas y espere que su hijo responda** **Lea y hable en su primer idioma**	hable y responda a su bebé; haga contacto visual abráselo, cante, hable, juegue, lea señale y nombre las cosas: nariz, pelota, bebé, perro... siga las indicaciones del bebé para "más" o "basta" juegue con el niño a "cu-cú" o "a las palmas"	sonría y responda cuando su hijo hable o señale deje que el niño ayude a voltear las páginas; siga nombrando cosas use libros en las rutinas familiares: para la hora de la siesta, del juego o de dormir; cuando va al baño; en el automóvil o autobús use libros para calmar o distraer a su hijo mientras esperan	pregunte *"¿Dónde está el perro?"* o *"¿Qué es eso?"* esté dispuesto a leer el mismo libro una y otra vez mientras lee, hable sobre las imágenes siga usando libros en las rutinas diarias	pregunte *"¿Qué sucede ahora?"* en los cuentos conocidos señale letras y números señale palabras e imágenes que empiezan con el mismo sonido juntos, inventen historias sobre las imágenes	relacione la historia con las experiencias propias de su hijo asegúrese de que su hijo lo vea leer pídale a su hijo que cuente la historia motívelo a escribir y dibujar señale las letras del nombre de su hijo
QUÉ PUEDEN LEER	libros de cartón y de tela; libros con caras de bebés; canciones de cuna	libros de cartón, libros de rimas, libros de imágenes, libros que nombran cosas	**DEJE A SU HIJO ELEGIR QUÉ LIBRO DESEA LEER. BUSQUE HISTORIAS SOBRE COSAS QUE LE GUSTAN A SU HIJO.** libros de rimas, libros de imágenes que cuentan historias; libros de buscar y encontrar	libros de imágenes que cuentan historias más largas; libros con el alfabeto y los números	cuentos de hadas y leyendas; libros con historias más largas y menos imágenes

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RESOURCES

Family-Friendly Guides to the SC Academic Standards
http://scfriendlystandards.org/

Everyday Learning Opportunities for Children
http://storytimeoregon.com/

Activities for the 5 Components of Reading
http://www.fcrr.org/for-educators/sca.asp

Put Reading First:
Helping Your Child Learn to Read – A Parent Guide(K-3)
http://www.centeroninstruction.org/files/PutReadingFirst_ParentGuide.pdf

Strategies for Teaching English Language Learners
http://www.scholastic.com/teachers/article/strategies-teaching-english-language-learners

Parent Tips: Help Your Child Have a Good School Year
http://www.colorincolorado.org/article/33152/

This activity guide was adapted from plans developed by the Mississippi Department of Education, Conewago Valley School District, PA; Downers Grove Grade School District 58, IL; and Blue Valley School District, KS.

Partners

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www.eoc.sc.gov

NEW SC College and Career-Ready Standards in ELA and Mathematics

2015-16 School Year Resources for Families

SC EDUCATION OVERSIGHT COMMITTEE

Reporting facts. Measuring change. Promoting progress.

SOUTH CAROLINA DEPARTMENT OF EDUCATION

So what does my child need to learn this year?

In March of 2015 the state adopted the new South Carolina College and Career-Ready Standards. These standards define the knowledge and skills in English language arts (ELA) and mathematics that children in kindergarten through grade 12 need to have to be college and career ready for the 21st century. Educators, parents, business leaders, and community leaders throughout the state met and wrote these standards. The state's colleges and universities reviewed the standards and agreed that students who met these standards would be ready for college and career upon graduating. In fact, the state has endorsed the following *Profile of the South Carolina Graduate*. The profile focuses on the key knowledge, skills and characteristics that children need to have upon graduation from high school.

The state also has standards in science and social studies. These standards written in family friendly terms can be found at http://scfriendlystandards.org.

Key things to remember:

1. Make sure your child is reading or being read to daily! Twenty minutes a day is a good start. Your child's reading ability at the end of third grade is a predictor of his or her ability to graduate from high school.

2. While the foundations of mathematics have not changed, 2 + 2 still equals 4, students will be learning mathematics differently. Why? The world is changing everyday. Advances in science, technology, and communication make it necessary for students to learn more about mathematics than just the facts. Students need to be able to solve real world problems; explain their thinking to others; identify and analyze data; and use technology.

   Consequently, your child's homework is changing. Your child will be asked to explain how they solved a problem and why. Often students will solve problems using data and technology that are applied to real-world problems. Your child will have to learn to communicate in writing and verbally the steps used to solve problems. It's all about helping our students to think while learning.

3. Try to make every lesson or experience relevant to your child! For example, during a trip to the grocery store, use labels and signs to improve reading skills or weigh produce to focus on measurement. You can even have a lesson on fractions by choosing between items based on price per unit.

WHAT ARE STANDARDS?

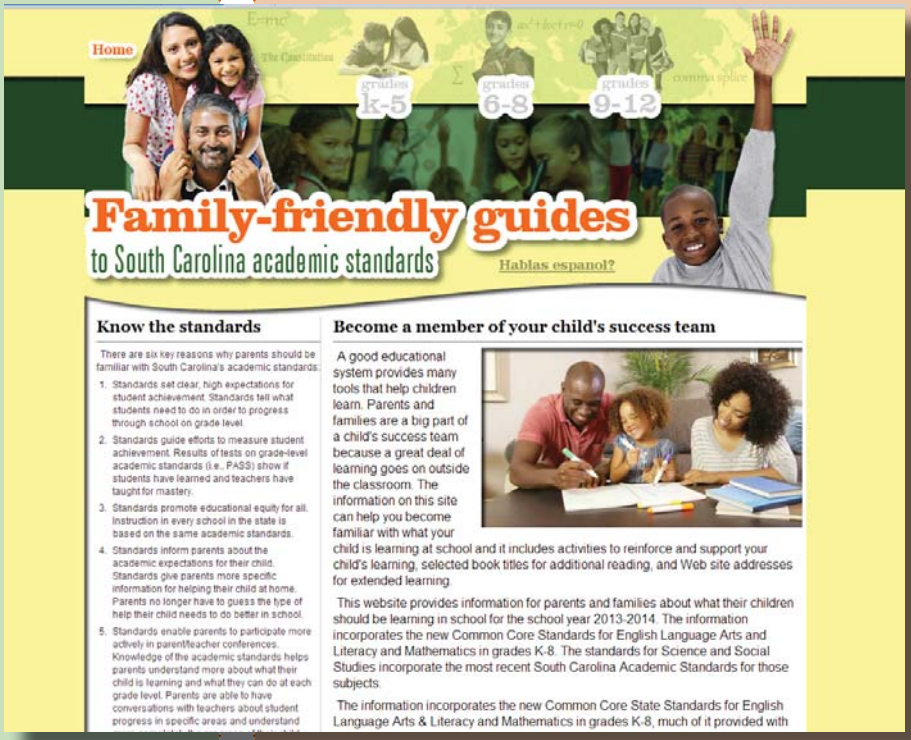
Standards make sure that teachers know what needs to be taught and what children need to learn at each grade level. Standards help inform families about the academic expectations for their child so that parents know the type of help their child needs to succeed. Standards represent what your child should be able to know and do at the end of the school year. How the standards are taught is left up to the curriculum selected and your child's teacher.

WHAT HAS CHANGED?

The content of the standards, such as being able to count by 10s to 100 by the end of kindergarten or to read independently by the end of 1st grade, is very similar to previous standards taught in our schools. However, South Carolinians agreed to raise the rigor or expectations of students in several grades.

The SC Department of Education and the Education Oversight Committee are working on a complete revision of the Family Friendly Standards, a document that describes the standards in family-friendly terms. In the meantime, please refer to http://scfriendlystandards.org/ and the prior school year's explanation of the ELA and math standards along with the following information. This information should help you and your child have a successful 2015-16 school year!

RESOURCES FOR HELPING YOUR STUDENT IN MATH



Pre-Kindergarten - Grade 5

USDE, Helping Your Child Learn Math
www2.ed.gov/parents/academic/help/math

Websites with activities and downloads to help your student develop number sense, understand place value, learn number patterns, and learn other math concepts:
www.smartfirstgraders.com/
www.letsplaymath.net/
www.softschools.com/math/

Grades 6-8

Challenging activities for middle school students:
www.figurethis.org
www.learnzillion.com
www.scetv.org

PARENT TIP:

Ask questions to help your children solve unfamiliar problems rather than showing them how to solve them.

RESOURCES FOR HELPING YOUR STUDENT IN ELA

Pre-Kindergarten - Grade 5

USDE, Helping Your Child Become a Reader
http://www2.ed.gov/parents/academic/help/reader/index.html

Websites with activities to help your student develop phonemic awareness, fluency, vocabulary, and comprehension skills:
www.eoc.sc.gov
(Student Reading Success Activity Guide)

www.surfnetkids.com/

Grades 6-8

Challenging activities for middle school students:
www.scetv.org

WWW.SCFRIENDLYSTANDARDS.ORG

Families' Guide to Assessments:
Student Success Tools

SC EDUCATION OVERSIGHT COMMITTEE
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Understanding the Purpose of Assessments

The goal of any assessment is to improve teaching and learning. Depending upon the type of assessment administered, an assessment should answer one of the following questions:

- Are students learning and understanding what is being taught?
- Are students being taught what they need to learn?
- Are students growing as learners?
- What did students learn?
- Are students prepared for the next level of learning or for college and careers?
- How do students compare to their peers in other states or nations?
- Into what class or intervention, should the student be placed to succeed academically?

Understanding Types of Assessments

There are many types of assessments designed by classroom teachers, by testing companies, by state departments of education, and by school districts. Some assessments are required by state or federal law while others are selected by district or school administrators. Below are descriptions and definitions of various types of assessments along with examples of assessments used in South Carolina and in other states. Note where assessments are given at the discretion of local schools, districts or course requirements; others are required by state or federal law.

Formative / Interim Assessments

Definition: Assessments that provide **immediate** feedback to students and teachers so that they can modify future instruction and learning. Some students may need more assistance and others may need accelerated learning opportunities. The assessment, often given multiple times during the school year, is to inform in-process teaching and learning modifications. Formative assessments are often used as interim measures, allowing teachers to determine if a child is on track to be successful at the end of the school year.

Examples: School/Class – homework, observations, questions, quizzes, reading logs, etc.

The S.C. Board of Education has identified the following formative assessments school districts may choose to use and receive state funding: Measures of Academic Progress (MAP); Blended Assessment with Instruction Program (BAIP-Math); STAR Reading and START Mathematics; and Istation

Tips for Student Testing Success

For Parents & Families

1. Know when tests are scheduled and keep up with results.
2. Don't schedule appointments, trips or other interruptions during testing.
3. Set a daily study time and limit interruptions.
4. Discuss homework with your child. Stress responsibility for doing the work and check to see that assignments are competed.
5. Keep track of your child's progress throughout the year. Praise success. Talk with your child's teacher about any areas of concern.
6. Encourage your child to ask questions at home or in class.
7. Read to your child, read with your child, and read yourself.
8. Encourage your child to review beforehand and do his/her best on testing days.
9. Remind your child of the importance of reading directions carefully and not rushing through a test.
10. Review test results with your child. Praise success and talk about what can be done for areas in need of improvement
11. Remind your child that they need to do their best -- some test scores can have an impact on his or her future.
12. Look for ways to make learning part of everyday activities.

Interim / Benchmark Assessments

Definition: Assessments administered at different intervals throughout the year to evaluate student knowledge and skills relative to a specific set of academic goals. Results are used to inform instruction and decision making at the classroom, school and district level, and can be used to measure student growth over time.

If the interim sets a level of proficiency with respect to specific content, then it is also considered a benchmark assessment. Interim assessments are typically given every 6 to 8 weeks.

Examples: Depending upon frequency of its administration, MAP may be used as interim or benchmark assessment.

Summative Assessments

Definition: Assessment to determine the level of student performance at the conclusion of a defined instructional period.

A summative assessment can be at the end of a project, unit, course, semester, program or end of the school year. In statewide accountability, summative assessment refers to end-of-grade testing in grades 3 through 8 and in high school. These assessments are designed to measure students' knowledge and skills in relation to state standards. Schools and districts in South Carolina are held accountable for educating all children, and the results of summative assessments help ensure that happens.Some summative assessments may be used to compare achievement of students in one state to the achievement of students in other states.

Examples: School/Class – Final exams; Advanced Placement (AP) and International Baccalaureate Exams *(at the discretion of the school or district)*

State: SC Palmetto Assessment of State Standards (SC-PASS) in Science and Social Studies in grades 4-8; End-of-Course Assessments in high school courses Algebra I, English 1, Biology and US History and the Constitution *(assessments required by state and federal law)*

Alternate Assessments

Definition: Assessment to evaluate the performance of students who are unable to participate in state assessments even with accommodations. Students typically have significant cognitive disabilities and therefore are assessed against alternate achievement standards.

Examples: SC-ALT in Science and Social Studies; National Center and State Collaborative (NCSC) Alternate Assessment in English Language Arts and Mathematics *(assessments required by state and federal law)*

Authentic & Performance Assessments

Definition: Assesses students using tasks that are more typical of how the skills are used in "real world" settings. Such assessments follow "authentic learning" in which teachers facilitate learning through connecting what students are taught in school to real-world issues, problems, and applications. Teachers decide what students need to be able to do to show mastery of knowledge and skills. Then the teachers develop learning activities to measure whether students have mastered essential knowledge, skills, and understanding. Students receive a rubric of project's criteria before begin work

Examples: English language arts – Writing letters to authors or characters; creating story maps; writing speeches; research papers; etc.
Math – Determining how much in materials and cost needed to build fence; etc.
Science - lab experiments; science fair projects; etc.
History - Creating travel brochures; holding mock trials; Socratic discussions, etc. *(all at the discretion of the school or district)*

Standardized tests

Definition: Standardized refers to the "conditions of administration" of a test, so the test is administered in the same way each time it is administered, and scored using the same procedures for all examinees. Some of hte most common standardized tests are aptitude tests; college admission tests; International comparison tests; Psychological tests; and Job Skills Assessments.

WHAT IS HIGH-STAKES TESTING?

We often hear about "high-stakes testing," meaning that decisions are made about a student, teacher, or school based on the results of certain tests. Most tests are not designed to be high-stakes but rather, are used to inform teachers about how students are progressing academically so that they can better help students.

Examples:

1. State - Gifted and Talented placement tests, Iowa Assessment (IA) and Cognitive Abilities Test (CogAT) *(assessments required by state and federal law)*
2. SAT, The ACT *(assessment required by state and federal law)*
3. Programme for International Student Assessment (PISA) and Trends in International Mathematics and Science Study (TIMSS)
4. IQ tests
5. ACT WorkKeys *(assessment required by state law)*

Kindergarten Readiness Assessment

Definition: Assessment that determines the developmental skills a child should have upon beginning kindergarten. It is meant to answer the question: Is my child ready for kindergarten? The readiness assessments often include social & emotional, mathematical thinking, health and early literacy.

The test is not used as an entry assessment but instead the results should provide teachers with a better understanding of each student's strengths and educational needs. It is not actually a test but instead include teacher observations, responses to questions and other activities.

Examples: State – Implemented CIRCLE assessment in 2014-15 to determine early literacy of students entering 4K and 5K. This year, school districts have a choice in 4K to administer the following three assessments: Individual Growth Development Indicators (IGDIs); Teaching Strategies GOLD; and PALS: Pre-K. The State will also pay for students entering 5K to be administered the Diagnostic Reading Assessment (DRA) although districts may use alternative assessments at their own expense.

Placement Tests

Definition: A placement test to determine which level of a class a student should be enrolled in or what level of intervention is needed.

Examples: ACCESS for English language learners and Alternate ACCESS for English language learners with significant cognitive disabilities. *(assessments required by federal law)*

National Assessments

Definition: The only continuing nationally representative assessment of what America's students know and can do in Reading, Mathematics and Science. The tests are given to randomly selected students in every state every two years.

Example: National Assessment of Educational Progress (NAEP)

IDEAS FOR PARENTS & FAMILIES

1. Find out which tests are given at your child's school and who determines which types of tests are given. What do these tests measure? Find out what you can do at home to help your child prepare for tests.

2. Discuss with your child the importance of all of his or her academic skills and personal attributes. Give examples of his or her strengths in different areas, and let him know about situations in your own professional and personal life that require a variety of skills.

3. You may want to consider organizing a "testing information" night for parents at your child's school about upcoming tests or how to interpret the results of tests. The SIC or PTO could sponsor an evening event featuring presentations as well as a question-and-answer session.

from the South Carolina Education Oversight Committee
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For Immediate Release

May 26, 2015

SC students to be challenged to "Read Your Way to the Big Game"

Columbia – The SC Education Oversight Committee (EOC) today announced "Read Your Way to the Big Game," a partnership with the athletic departments of both the University of South Carolina and Clemson University to motivate and incentivize all elementary and middle school students in South Carolina to read grade level texts.

The "Read Your Way to the Big Game" contest, which will begin in school year 2015-16, provides the opportunity for all elementary and middle school students who meet a six-book challenge to qualify for tickets to the Palmetto Bowl, the "big game" between the University of South Carolina and Clemson University football teams. Two students will be chosen at random to win two tickets each as well as pre-game passes to the historic match-up, which will take place at Williams Brice Stadium in Columbia on November 28, 2015. There will be two student winners; one for the University of South Carolina and one for Clemson University.

"The EOC is thrilled to partner with USC and Clemson on this program, which we hope will get children excited about accepting and completing the reading challenge and becoming life-long readers and learners," said Melanie Barton, EOC Executive Director. "An early foundation in reading is one of the highest predictors for individual success, and student motivation is often increased when children are given the freedom to choose books that interest and excite them.

Schools, classroom teachers and school library media specialists will also have the opportunity to participate in next school year's challenge. Two schools with at least 70 percent participation will be drawn at random to receive $2,000 for their school libraries. Also, five participating teachers will be chosen, each winning $500 for their classrooms. Finally, two teachers or school library media specialists who decorate bulletin boards, doors, or walls to promote the challenge will be entered to win $500 each for their classrooms or libraries. Materials for the program will be mailed to schools at the beginning of the 2015-16 school year.

The SC Education Oversight Committee is an independent, non-partisan group made up of 18 educators, business persons, and elected leaders. Created in 1998, the committee is dedicated to reporting facts, measuring change, and promoting progress within South Carolina's education system.

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READ YOUR WAY TO THE BIG GAME

DATES TO REMEMBER

TUESDAY, SEPTEMBER 1

Schools should receive Big Game kits by this date.

SATURDAY, SEPTEMBER 5

EOC / "Read Your Way to the Big Game" Tent set up at Wofford vs. Clemson game

SATURDAY, SEPTEMBER 12

EOC / "Read Your Way to the Big Game" Tent set up at Kentucky vs. USC game

WEDNESDAY, NOVEMBER 11

Postmark deadline for students to submit reading logs.

SC EDUCATION OVERSIGHT COMMITTEE
READ YOUR WAY TO THE BIG GAME
★ 2015 ★
READING CONTEST

READ YOUR WAY TO THE BIG GAME !

TURN IN ALL ENTRY CARDS TO YOUR TEACHER!

READING SEASON HAS BEGUN!

SC EDUCATION OVERSIGHT COMMITTEE

READ YOUR WAY TO THE BIG GAME

★ 2015 ★

READING CONTEST

Read Your Way to the Palmetto Bowl!

Celebrate South Carolina's championship tradition by participating in the SC Education Oversight Committee's ***Read Your Way to the Big Game*** contest.
All students who read six books qualify to win a trip to the Palmetto Bowl with one guest, sideline passes and pre-game activities.

Go Gamecocks! Go Tigers! Keep reading!

For more information go to www.eoc.sc.gov