

Making Education Work for ALL Georgians

Supporting Evidence from Research, Model Schools and Exemplary Practices

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Urgent Needs, Ambitious Goals, Fewer Resources

Georgia has good reason to embrace its bold vision for 21st century education: career exploration and real-world experience in current and future career pathways to ensure that ALL students have the opportunity to be successful in our rapidly changing and evolving digital world and global economy. This opportunity for students, specific to the needs of Georgia communities and businesses and the nation, is the vision that educators must adopt.

Georgia's vision for education is supported by current research and most significantly by the Harvard Graduate School of Education 2011 study, *Pathways to Prosperity: Meeting the Challenge of Preparing Your Americans for the 21st Century*. That report examines the reasons for our failure to prepare so many young people for success in adult life and advances a vision for how the United States might regain the leadership in educational attainment. The report advocates development of a comprehensive pathways network to assist in meeting the Common Core State Standards and serve youth and the state on three essential elements:

1. Meaningful alternative pathways to help young people successfully navigate from adolescence to adulthood that offer additional approaches to a traditional bachelor's degree.
2. Employer support in providing more opportunities for young adults to participate in work-based learning and actual jobs related to their programs of study.
3. Ensuring that, by the time they reach their mid-20s, every individual will be equipped with the education and experience needed for success in life as an adult.

The state's leaders are acutely aware of the ambitious and yet convergent nature of its K-12 improvement efforts. They recognize that change is needed and of utmost urgency and are addressing the multiple challenges ahead:

- Georgia House Bill 186 is a future-thinking and demanding vision aimed at:
 - Ensuring that all students can be successful in college and career by providing a career-readiness continuum for students, starting with awareness in elementary, exploration in the middle grades, with both leading to career pathways in high school and beyond.
 - Providing "top-down support for bottom-up reform" with great flexibility given to local school districts in implementing career pathways, based on local need and ability.
- As a Race to the Top funding recipient, Georgia has committed to adopting the "fewer, clearer, higher" Common Core State Standards and implementing the related next generation assessments.
- As a recipient of Round 2 Race to the Top funding, Georgia will introduce a new teacher evaluation system, based in part on student academic performance.

These significant school improvement efforts have been initiated when, like most states, Georgia is facing financial stress due to the general downturn in the American economy. Georgia's unemployment

rate was 10.2% in August 2011, with non-farm employment at its lowest level within the past decade (www.bls.gov/eag/eag.ga.htm). More than ever, Georgia's employers need a highly skilled workforce aligned to the requirements and directions of local business and industry. This is a challenge that will require close cooperation between K-12 and postsecondary education and its business stakeholders.

In short, Georgia's K-12 leadership and schools are being asked to do a lot more with fewer resources. Under such circumstances and challenges, the questions are obvious:

- *Why* are we being asked to change so much?
- *What* is it we are supposed to do?
- *How* can we successfully meet all these demands?

Why Do We Need to Change?

The reasons behind the urgency for transformational change are increasingly evident. As is so well illustrated in *Pathways to Prosperity*:

"[Since 1973]... while the total number of jobs in America had grown to by 63 million, the number of jobs held by people with no postsecondary education had actually fallen by some 2 million jobs....The message is clear: in 21st century America, education beyond high school is the passport to the American Dream."
([www.gse.harvard.edu/news_events/features/2011/Pathways to Prosperity Feb2011.pdf](http://www.gse.harvard.edu/news_events/features/2011/Pathways_to_Prosperty_Feb2011.pdf))

That report goes on to add:

"Focusing more precisely on future employer demand illuminates part of the challenge, but there's also a problem at the supply end of the equation. U.S. employers complain that today's young adults are not equipped with the skills they need to succeed in the 21st century workforce."

The impact of such an underprepared workforce is all the more damaging in light of several dynamics that are shaping Georgia, the nation and the world. The issue is central to why the Common Core State Standards were developed "for college **and** career readiness." We are, in fact, discovering that career-ready academic skills and knowledge are often higher than — and also fundamentally different from — those needed for college. Providing students with only college-prep skills and knowledge is no longer sufficient. As Georgia's vision indicates, students need to leave high school equipped to be successful in *both* postsecondary roles.

In its position paper "Reinventing the American High School for the 21st Century," the Association for Career and Technical Education (ACTE) recommends that schools and districts establish a clear systemwide goal of career and college readiness for all students. The paper reflects the same intent and vision as the recommendations of the *Pathways to Prosperity report*, GA HB186, and the international Center's recommended approach to school improvement: prepare each and every student for a variety of postsecondary opportunities, meaningful work, career advancement, and active citizenship.

To achieve the goal of college and career readiness, the International Center believes we need to create a new vision for secondary education based on the **convergence of academic (rigorous) and career and technical (relevant) education**. The convergence of academic and CTAE content requires that a blending of the two take place to create a new, contextual way of learning. The goals of learning should be the continual acquisition of new skills and knowledge — what most educators think of as academic rigor.

However, without sacrificing academic rigor, students must learn to apply their skills and knowledge to real-world problems, to adapt solutions to an ever-changing society, and to solve problems we have yet to recognize. This is real-world relevancy.

In its continuing analysis of the nation's highest performing and most rapidly improving schools, the International Center has found that the distinction between where academics and CTAE begin and end is truly blurred. Students in these schools perform at high levels on high-stakes tests and have recall of rigorous academic content to apply in solving problems with unpredictable outcomes. The International Center's plan to undertake — in partnership with ACTE and other national education organizations — a vigorous study of successful and promising practices in this area of career- and college-ready convergence.

Globalization of business is accelerating with a growing number of competitors, most prominently India and China, but also such emerging economies as Argentina, Brazil, Indonesia, Viet Nam, Panama and others. China has become a manufacturing giant, now exporting more in a single day today than it did in all of 1978. In fact, today a cargo container is shipped every second, 24 hours a day, seven days a week from a state-of-the-art shipping facility in the port city of Shenzhen, much of it on its way to retailers such as Walmart, now the largest company in America. Such data illustrate what is perhaps an even more significant trend: the United States is shifting from an economy based on manufacturing to one built on retailing. That shift will prevent us from sustaining the economic base that America has enjoyed for decades and come to expect. To reverse this trend, we must move toward a 21st century manufacturing economy, one empowered by the kind of highly-skilled workforce required by today's manufacturing- and technology-based businesses which provides "value-added" jobs to individuals and prosperity to Georgia and the nation. The economic leadership that the United States enjoyed during the second half of the 20th century is very much at risk without a highly skilled local workforce to accomplish this goal.

In the 20th century, the U.S. wrestled manufacturing away from Europe. In the last two decades of the century, first Japan and then China did something similar to us. In the 21st century, emerging economies in the Pacific Rim and South and Central America are attempting the same type of transfer of industrial wealth. The "recession" that America is experiencing may turn out to be more of a permanent switch than a downturn if we do not react.

Technology is changing even more quickly than the global economy. It is getting smaller, speedier, stronger, and more adaptable. Nanotechnology, biotechnology, imaging, and information technology are advancing at unprecedented rates, impacting manufacturing, electronics, transportation, military defense, communication, healthcare, the food industry, and the list goes on. We only needed to watch IBM's mega-computer "Watson" handily defeat Jeopardy champions Ken Jennings and Brad Rutter on TV to recognize the promise of artificial intelligence. An online search tool called WolframAlpha (www.wolframalpha.com) is a "computational knowledge engine" (Wikipedia calls it an "answer engine"). Wolfram Alpha has capacities beyond search engines like Google, which provide lists of potentially relevant links as search results.

Technology must be harnessed as a learning tool; but education leaders must also consider the implications of "intelligent" technologies on what "college- and career-ready learning" really means for today's K-12 students. The challenge for educators is not to dismiss or keep up with students' latest technological know-how, but to create meaningful learning experiences in which students are taught how to *apply* their knowledge to solve real-world problems.

The 21st century skills and knowledge needed in our increasingly technological and information-based society, which is being driven by global competition, are higher level than - and different from - what is being taught today in our 20th century education system.

Demographics are changing, too. The number of Americans aged 65 and older climbed above 34.9 million in 2000, compared with 3.1 million in 1900. For the same span, the ratio of elderly Americans to the total population jumped from 1 in 25 to 1 in 8. The trend is guaranteed to continue as the baby-boom generation grows older.

Ratio of the Prime Working-Age Population to the Elderly	
Year	Ratio
1995	4:1
2000	4.1
2005	4.0
2010	3.9
2020	3.1
2030	2.3

There will also be shifts in race and ethnicity. For example, significant increases have occurred in the size of the Hispanic-Latino origin population of Georgia, which grew significantly in the past decade, the fastest growing demographic in the state (www.highbeam.com/doc/1G1-252138680.html). The U.S. Hispanic population has risen from about 12.5% in 2000 to approximately 15.1% in 2009. (<http://factfinder.census.gov/home/saff/main.html?lang=en>; www.census.gov/prod/cen2010/briefs/c2010br-04.pdf)

The student populations – and the educators who serve them – will be from increasingly diverse backgrounds. Most will have grown up in multi-cultural communities, will be technology-adept, and will have different sets of educational needs and expectations.

Financially, as we are all painfully aware, The United States is in a serious fiscal crisis. In the 2011 federal budget, the U.S. is borrowing 41% of every dollar it is spending. That rate is simply not sustainable. The economic impact on education is already significant and will continue to be so for the foreseeable future.

What Do We Need to Change?

We must deliver a more rigorous and relevant education to *all* students if we are to prepare them to succeed in our increasingly technological and globally competitive society.

Common sense as well as research and “on the ground” observation prove what most educators know: what goes on between the teacher and each student is central to high-level learning, student achievement, and preparedness for future success.

Three key elements have emerged as having significant impact on student achievement and preparedness:

- a culture of high expectations
- rigorous and relevant learning standards
- student engagement nurtured by positive relationships

These key elements are supported by the International Center’s analysis of work with the nation’s most rapidly improving schools as well as the vast body of education research done in recent years on successful schools.

Evidence from International Center Research/Best Practices and Model Schools

For two decades, the International Center has been an active learner, researcher, observer, facilitator, and shaper of innovative school improvement and education reform through:

- Finding, observing, and showcasing of best practices at its annual Model Schools Conferences, which bring together thousands of educators to hear the stories of schools with challenging demographics that have succeeded in raising student achievement.
- A five-year study of the nation’s most successful and rapidly improving schools — co-sponsored by the Council of Chief State School Officers (CCSSO) and the Successful Practices Network and funded by the Bill & Melinda Gates Foundation — which identified best practices used by hundreds of exemplar schools across the nation. (See Corso, Fox, Lucey and Silver (2011). *Focused on Student Success: A Five-Year Research Study of Models, Networks, and Policies to Support and Sustain Rigor and Relevance for ALL* or contact the International Center.)

From both experiences, the International Center has found that the same three common elements are especially prevalent - and embodied - in the Career Pathways structures that Georgia is moving toward:

Elements and Practices	Attributes of Career Pathways Model
<p>1. Relevant and Rigorous Learning Standards</p> <ul style="list-style-type: none"> • Application of knowledge • Creativity programs • Problem-solving teaching • Clear and challenging, but attainable goals 	<ul style="list-style-type: none"> ▪ learning to <i>do</i>, not just to know ▪ project-based learning ▪ connecting school to the real world ▪ solving real-world problems ▪ learning outcomes that prepare students for careers as well as for college
<p>2. Effective Student-focused Teaching and Instructional Leadership</p> <ul style="list-style-type: none"> • Providing formative evaluation • Microteaching • Teacher clarity • Professional development • Developing, rewarding, and retaining effective teachers and principals • Direct instruction • Quality of teaching 	<ul style="list-style-type: none"> ▪ use of assessment for instruction ▪ learning by doing ▪ teacher as guide and facilitator ▪ mix of instructional strategies ▪ teachers learn from students and each other ▪ teachers and principals are supported/recognized ▪ teachers and principals <i>feel</i> supported/recognized ▪ instruction is student-focused ▪ standards of instruction are clear and aligned K-12 and across disciplines
<p>3. Student Engagement Nurtured by Positive Relationships</p> <ul style="list-style-type: none"> • Self-reported grades • Providing feedback • Teacher-student relationships • Prior achievement • Peer tutoring • Concentration/persistence and engagement • Motivation • High expectations for students 	<ul style="list-style-type: none"> ▪ teachers have high expectations of all students ▪ teachers provide regular feedback and encouragement ▪ students understand the goals and measures of achievement/success ▪ students learn from each other ▪ teachers know and care about their students ▪ teachers know their students' history ▪ students know/care about their teachers and each other ▪ students progress along an aligned K-12 continuum ▪ students are engaged in their own learning ▪ students are motivated

Evidence from Third-Party Research

These three key elements also surface in the research as the key characteristics of highly successful schools. The research that has been among the most instructive includes:

- *Hattie's Visible Learning: A Synthesis of Over 800 Meta-Analyses Relating to Achievement*
- Harvard Graduate School of Education's *Pathways to Prosperity: Meeting the Challenge of Preparing Your Americans for the 21st Century*
- *InTASC Model Core Teaching Standards: A Resource for State Dialogue*, developed by the Council of Chief State School Officers (CCSSO)
- Sutton Trust's *Toolkit of Strategies to Improve* www.suttontrust.com/research/toolkit-of-strategies-to-improve-learning

Of those informing sources, John Hattie's work is particularly useful because it allows for comparisons of the relative impact of various instructional practices and variables

Please see the Appendix for a discussion of Hattie's findings.

Fewer Standards: Less Is More

Like most states, Georgia has never seen a learning standard it doesn't like. The state's current standards are exhaustive. However, when everything is deemed equally important, nothing gets prioritized or given the attention it needs and deserves. Adopting the Common Core State Standards (CCSS) will allow students — and their teachers — richer opportunities and more time to address fewer learning expectations but in greater depth. Enhanced understanding and engagement will be the result.

The CCSS and the Career Pathways initiative will help focus Georgia's schools on the 21st century skills needed for college and, especially, for career readiness, such as purposefully interpreting informational text, process skills, and problem solving and analytical thinking in mathematics.

Clearer Standards: What Students Really Need to Know and Be Able to Do

Georgia's CCSS and Career Pathways initiatives are being developed from strong research bases, such as the International Center's National Essential Skill Study (NESS). This study asks educators, business and industry representatives, parents, and other stakeholders to force-rank proficiencies that "all students need to know and be able to do by the time they graduate from high school." The data from that exhaustive survey of nearly 21,000 adults has helped inform both the CCSS and Career Pathways expectations. Among other data, NESS identifies glaring discrepancies between how "sacred cows" are prioritized by subject-matter specialists in their subject area and what other educators and survey-takers believe are the most essential learning outcomes (www.leadered.com/ness.html).

Higher Standards: What the NAEP and Lexile Framework® "Yardsticks" Tells Us

The National Assessment of Educational Progress (NAEP) is the largest nationally representative and continuing assessment of what America's students know and can do in various subject areas. NAEP is conducted periodically in mathematics, reading, science, writing, the arts, civics, economics, geography, and U.S. history. Since NAEP assessments are administered uniformly using the same sets of test booklets across the nation, NAEP results serve as a common metric for all states and selected urban districts. The assessment stays essentially the same from year to year, with only carefully documented changes. This permits NAEP to provide a clear picture of student academic progress over time. As the

tables below indicate, recent NAEP results show significant disparities between how different states define "Proficiency" on their own tests of state standards.

For example, although 81% of Georgia students who took the state test in grade 8 mathematics were deemed Proficient, Georgia's cut-score defining "proficiency" appears to be set relatively low compared to the NAEP equivalents for Mississippi or Massachusetts, for example.

2009 Proficiency Grade 8 Mathematics	Proficient	Required NAEP Score
Tennessee	90%	229
Georgia	81%	247
Texas	83%	254
North Carolina	80%	253
Ohio	71%	265
Florida	66%	266
Mississippi	58%	264
Massachusetts	48%	300

Similar discrepancies among states, including Georgia, appear in grade 4 reading results.

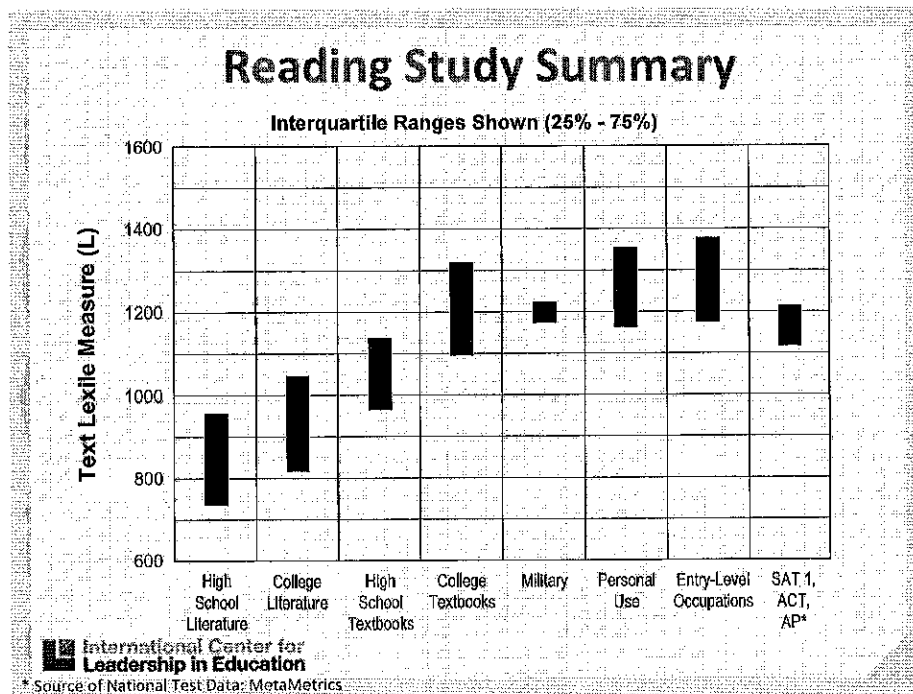
2009 Proficiency Grade 4 Reading	Proficient	Required NAEP Score
Georgia	87%	178
North Carolina	82%	183
Texas	81%	190
Ohio	77%	199
Florida	71%	202
Massachusetts	48%	234
California	48%	210
South Carolina	35%	228

Such uneven playing fields — setting the “proficiency” bar artificially low, relative to other states — are a disservice to students and communities in terms of preparing graduates who are world-class college- and career-ready.

The relatively low definition of proficiency was set a decade ago. As happened in many other states, it was a defensive response to *No Child Left Behind*. That minimal benchmark has become all the more troubling to Georgia’s current leadership, who understand the increased levels of proficiency needed in reading and math in the world beyond school. For example, a recent Lexile study on the reading levels required in the workplace, home, and society in general shows that these adult roles have higher reading requirements than high schools require of students to graduate.

There are similar discrepancies between the reading ability levels required in high school and those needed for life and work after graduation. The Lexile Framework® for Reading, developed by MetaMetrics, evaluates both reading ability and text complexity on the same scale. Unlike other systems, the Lexile Framework uses assessment results to match readers with texts essential for growth and monitor their progress toward standards. Twenty-one states, including Georgia, report Lexile measures on their state tests.

In partnership with MetaMetrics, the International Center has compared the relative levels of reading proficiency needed for high school as well as college success, for entry-level workplace readiness, and for a variety of other “real-world” literacy tasks.



The Lexile analysis shows that what high schools expect of students in reading proficiency is not adequately anticipating future requirements, such as for entry-level employment and for comprehending tax forms and insurance policies (www.lexile.com).

Different Standards: Knowledge and Recall Are Not Enough

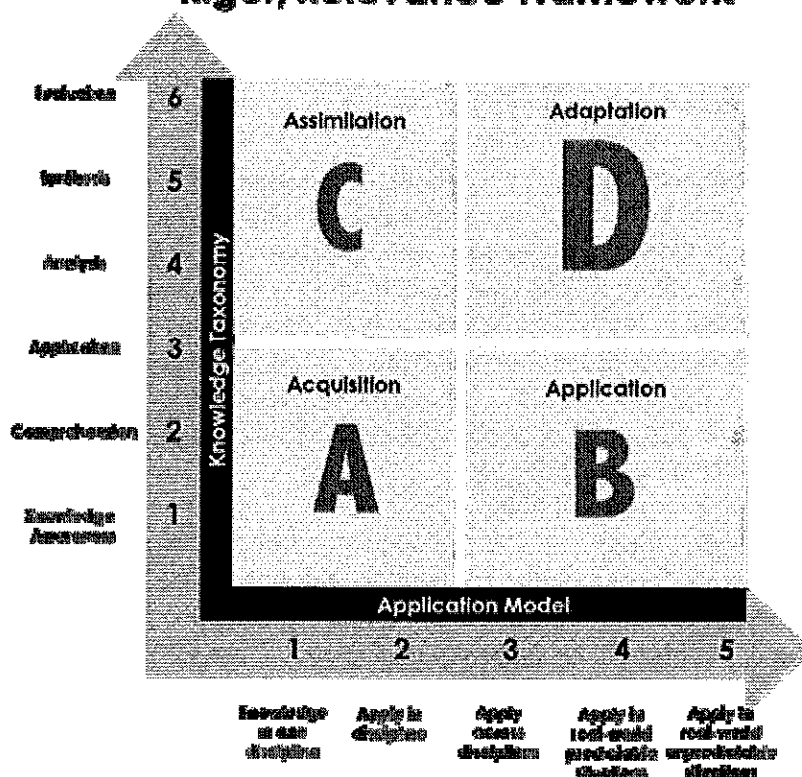
Georgia's prudent commitment to implementing its Career Pathways model, which is highly consistent with — and reinforced by — the state's decision to adopt the Common Core State Standards for College and Career Readiness, will allow educators to focus their students on "fewer, clearer, higher" learning expectations. Students will also be expected to develop more in-depth understanding of *priority* concepts and, especially, the ability to *apply* the knowledge developed across disciplines in the execution of more complex performance tasks.

The International Center's widely-used Rigor/Relevance Framework® is conceptual model that has become a framework in many states for development and implementation of the CCSS. It is a tool that Georgia educators can use to examine curriculum, instruction, and assessment. The Rigor/Relevance Framework is based on two dimensions of higher standards and student achievement.

- The Knowledge Taxonomy, a continuum represented on the vertical axis, based on the six levels of Bloom's Taxonomy, which describes the increasingly complex ways in which we think. The low end involves acquiring knowledge and being able to recall or locate that knowledge. The high end labels the more complex ways in which individuals use knowledge, such as taking several pieces of knowledge and combining them in both logical and creative ways.
- The Application Model has five levels describe putting knowledge to use. While the low end is knowledge acquired for its own sake, the high end signifies use of that knowledge to solve complex real-world problems and to create unique projects, designs, and other works for use in real-world situations.

The Rigor/Relevance Framework has four quadrants. Each is labeled with a term that characterizes the learning or student performance at that level.

Rigor/Relevance Framework®



The Rigor/Relevance Framework is easy to understand. With its simple, straightforward structure, it can serve as a bridge between school and the community. It offers a common language with which to express the notion of a more rigorous and relevant curriculum.

The Rigor/Relevance Framework is versatile; it can be used in the development of instruction and assessment. Likewise, teachers can use it to measure their progress in adding rigor and relevance to instruction and to select appropriate instructional strategies to meet learner needs and higher achievement goals (www.leadered.com/rrr.html).

All of the above help answer the question “What do we need to change?” and hopefully explain the significance of each area of reform and improvement involved in Georgia’s transition to 21st century learning.

With the *why* and *what* addressed, we can examine the *how*.

How Do We Change?

House Bill 186 is a praise-worthy and also an ambitious step forward in school (and state) improvement. The initiative is separate from — but in some aspects complementary to — Georgia’s school improvement plans related to Race to the Top. Both initiatives will need strong leadership, rigorous planning, and adept support for implementation.

Among a number of measures, HB186 mandates career pathway programs for high school graduation; infusing career-technical-agricultural courses with rigorous academic content; accelerating student

learning by providing dual-credit course offerings; end-of-course assessments with demonstration of proficiency; soft-skills certification in conjunction with the Governor's Office of Workforce Development; enhancing professional development for teachers; and addressing such issues as remediation in postsecondary programs.

Other states are in the process of school improvement initiatives similar to those of Georgia. For example, in New York State — another Race to the Top recipient — the International Center and the not-for-profit Successful Practices Network have partnered to establish a CTE Technical Assistance Center for the New York State Education Department (NYSED). The Technical Assistance Center is advancing the concept of converging academic education and career and technical education as a key strategy to help New York implement the Common Core State Standards successfully. In many New York districts, core academic teachers and CTE teachers are working collaboratively to create innovative programs that align to the CCSS in a holistic way. These programs include the following components:

- The curriculum design provides rigorous content that is non-duplicative and offers the student a coherent, sequential program of study.
- The curriculum has been aligned to the CCSS.
- The secondary curriculum is aligned with a postsecondary education program.
- A technical assessment that meets current industry standards is available to all program completers.
- Articulation agreements with postsecondary education are constructed to provide students with direct benefit.
- All programs provide work-based learning opportunities for all students.
- A data reporting infrastructure is developed to report student performance in order to evaluate success on state exams, approved alternatives, technical assessments, and placement in higher education, employment, or the military.

Like Georgia, NYSED recognizes that teaching for both academic rigor and CTAE relevance is a win/win experience for students, teachers, and administrators. The resulting convergence helps students improve their performance and assists in the transition to postsecondary education.

"The current K-12 education system, especially at the secondary level, was not designed to facilitate integration among programs and disciplines. The Technical Assistance Center is working hard to change the existing structures and mental models by identifying best practices and influencing state and local policy. It is critical to address and eliminate those practices and policies which prevent convergence of academics and CTE from occurring. Until this is accomplished; until an education is created that is not divided by obsolete courses and a scope and sequence that encourages elimination of relevance in education, we cannot hope to change the status of American students globally, nor can we retake our place as a serious competitor in the global marketplace."
Tim Ott, President, Successful Practices Network

The International Center has several resources that New York and other states that have found most helpful in supporting in their education reform efforts.

Next Navigator is an online tool that supports instructional leaders and teachers in planning the kind of instruction that will prepare students for the more challenging requirements of the CCSS and next generation assessments. It:

- Aligns Georgia state standards with the CCSS so educators can identify gaps between the current curriculum and expectations of the CCSS.

- Prioritizes each standard's instructional objectives by the likelihood of its being tested on the state test and its importance based on what students need for success in adult life according to the National Essential Skills Study (NESS).
- Provides sample assessments and scoring guides to help teachers prepare students for the higher levels of rigor and relevance required (See www.nextnavigator.com/spn/page/Learn-More)

Achieving Academic Excellence Through Career-Technical Education (GA Version) and Meeting High Academic Standards Through Arts Education (GA Version) both assign a priority rating to each state standard in English, math, and science based on the emphasis given to that standard on state tests. Standards are also crosswalked to the NESS, which ranks the importance of curriculum content in the subjects relative to what graduates need for success in adult life. From this data, teachers can readily find the standards/ benchmarks for the grade and subject they are teaching. They can then determine if a standard/benchmark is likely to be assessed on the state test and the relative weight given to it. They can also discover its importance in terms of what students need to know and be able to do after high school graduation.

- The GA Curriculum Matrix for Career, Technical, & Agricultural Education identifies opportunities for addressing high-priority academic standards within multiple programs within each of the U.S. Department of Education's 16 Career Clusters and a 17th Career Cluster unique to Georgia – Energy.
- The GA Curriculum Matrix for Arts Education identifies opportunities for addressing high-priority academic standards in the visual arts, music, theatre, and dance.

The 2012 Model Schools Conference

The 20th annual Model Schools Conference on June 24-27 in Orlando will showcase the nation's most rapidly improving schools, as identified in a five-year study by the Successful Practices Network and the Council of Chief State School Officers, with funding from the Bill & Melinda Gates Foundation. Leaders and practitioners from the schools will showcase their most successful practices. Those practices are an excellent match to Georgia's Career Pathway initiative. Therefore, in partnership with the Georgia Department of Education, a special conference-within-a-conference for Georgia educators and leaders will be co-hosted by State Superintendent John Barge and International Center CEO Bill Daggett, who is the lead researcher on the five-year study.

The Conference will feature many of America's most popular keynote and featured speakers. In addition to presentations designed specifically for (and by) Georgia educators, dozens of rapidly improving schools from across America will share their success stories. More than 7,000 educators left the 2011 Model Schools Conference energized and inspired (www.modelschoolsconference.com).

Conclusion

Georgia's Vision - Making Education Work for ALL Georgians - to empower its graduates and its communities to be successful in an increasingly technological and globally competitive, information-based society — must and will be driven by a more rigorous and relevant curriculum. Successful implementation of the Career Pathway initiative and the Common Core State Standards will help accomplish this goal. However, this challenge will require schools in general, and teachers and school leaders in particular, to use different sets of tools, strategies and organizational structures. Professional development that is focused and sustained will help ensure that Georgia's educators learn and employ 21st century instructional practices to provide all students with a college- and career-ready education.

Appendix

HB186 and *Pathways to Prosperity*: Supportive Research, Successful Practices, and Exemplary Schools

Among all of the research sources examined, John Hattie's work is particularly useful and effective because it allows for comparisons of the relative impact of various instructional practices and variables. His approach was that effect sizes (the relative impact of one factor compared to other factors) are the best way to identify what has the greatest influence on student learning.

The calculations behind Hattie's work are complex, but to simplify, an "effect-size" of 1.0 (defined as an increase of one standard deviation) is typically associated with the equivalent of approximately two years of growth in one year. Hattie's analysis shows that most variables in schools have an effect size of around +0.3 or +0.4, what Hattie calls his "hinge point." Any factor between 0.0 and +0.4 is of lower value. Any value above +0.4 is desirable. Factors below 0.0 have negative effects.

Professor Hattie's research is also an *efficient* way to leverage research because it analyzes 200,000 "effect sizes" from 52,637 studies involving more than 50 million students and covering an exhaustive number of factors (www.education.auckland.ac.nz/uoq/home/about/staff/j.hattie).

The following table correlates a number of the Key Elements of HB 186 (as informed by the Harvard *Pathways to Prosperity* report) with:

- Hattie's meta-analysis of "effect sizes" data
- Related tools/instructional strategies/best practices developed by the International Center for Leadership in Education
- Examples of model schools studied by the International Center

Key Elements of HB 186 as informed by Harvard's <i>Pathways to Prosperity</i>	Related Research based on Developmental "Effect Size"* of Various Strategies/Approaches (per Hattie's <i>Visible Learning</i>) *Effect Size of 1.0 SD = ~ 2-3 years of developmental growth in 1 year	Related International Center Instructional Strategies/ Best Practices	Relevant Examples of International Center Model Schools
Career Pathways			
Career Pathway options for HS students (built on Career Awareness/Exploration in K-8) comprised of a college-ready academic core and quality career, technical, and agricultural education studies for career and college readiness	Goals +0.56 (~1.12 years of growth) Students being given challenging but at least partially achievable goals	<ol style="list-style-type: none"> 1. Selection of Career Pathway 2. Development of Career Pathway Goals and Actions 3. Development of Career and College Readiness Plan 4. Development of Student Performance Plans 5. Student Led Parent/Teacher Conference to Review Goals, Performance, and Expectations 	Dayton Early College, OH Douglas Taylor Elementary School, IL La Quinta High School, CA Four Oaks Elementary School, NC KIPP Academy Nashville, TN
Studies resulting in a HS diploma and preparation for success in advanced training, an associate's degree, a baccalaureate degree, and a career Dual credit coursework leading to postsecondary credits	Motivation +0.48 (~0.96 years of growth) Personal striving of students, sense of control over own learning	<ol style="list-style-type: none"> 1. Selection of Career Pathway 2. Enrollment in CTE Program or Themed Academy 3. Student Leadership Programs 4. Response to Intervention Program 5. Character Education Program 6. Rewards and Recognition for School Citizenship 	AB Combs, NC Brockton HS, MA South Heights Elementary School, KY Rocky Heights Middle School, CO

Key Elements of HB 186 as informed by Harvard's <i>Pathways to Prosperity</i>	Related Research based on Developmental "Effect Size"* of Various Strategies/Approaches (per Hattie's <i>Visible Learning</i>) *Effect Size of 1.0 SD = ~ 2-3 years of developmental growth in 1 year	Related International Center Instructional Strategies/ Best Practices	Relevant Examples of International Center Model Schools
Stronger coordination between high schools and institutions of higher education	<p>Concentration/Persistence and Engagement +0.48 (~0.96 years of growth)</p> <p>Active student participation in learning</p>	<ol style="list-style-type: none"> 1. Quadrant D Instructional Strategies 2. Career Technical Education 3. Small Learning Communities 4. Freshman Academy 5. I Know My Class Survey 	<p>Saunders Trades and Technical High School, NY CV-Tech – Plattsburgh Aeronautical Institute, NY La Quinta High School, CA Chuckey Doak High School, Afton TN Delaware Area Career Center, Delaware OH Manor New Technology High School, TX English Estates Elementary School, NY Raleigh Charter High School, NC</p>
Pathways aligned to high-demand, high-skill, high-wage career fields and to postsecondary career and technical pathways leading to advanced credentials or degrees	<p>Creativity Programs +0.65 (~ 1.30 years of growth)</p> <p>Training, plus encouragement practice in using creative thinking techniques such as thinking with fluency, flexibility and "an element of the unusual"; "D Quadrant" learning</p>	<ol style="list-style-type: none"> 1. ICLE's Learning Criteria 2. Career Technical Academy – Themed Academies for Fine Arts and Sciences 3. Computer Programming and Gaming 4. Computer Animation 5. Computer Graphics and Design 6. Gifted and Talented Programs 7. Enrichment Courses <ul style="list-style-type: none"> • Fine Arts • Odyssey of the Mind • Extracurricular Clubs/Programs 	<p>Jensen Beach High School, FL Woodside High School, CA Kelly Mill Middle School MidTown West Elementary School, NY Newton-Conover Health Science High School, NC Sparta School K8, NC</p>

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Rigorous/Relevant Curriculum and Instruction			
Academic core standards embedded in career, technical, and agricultural education credit courses recognized at the postsecondary level	Application of Knowledge +0.65 (~ 1.30 years of growth) Embedding knowledge in context and applications; requiring application of knowledge – not just knowledge - in learning standards.	<ol style="list-style-type: none"> 1. Rigor/Relevance Framework® 2. Career Pathway Internships 3. Authentic Assessment 4. Reading/Writing Across the Curriculum 5. Performance Based Assessment 6. Project Development 7. Research/Analysis 8. Demonstration – Mastery of Learning 	A.B. Combs Leadership Magnet Elementary School, NC A.J. Moore Academy, TX Brockton High School, MA Kennesaw Mountain High School, GA Cotton Boll Elementary School, AZ Olathe East High School, KS Northeast High School, PA South Middle School, MA
Uniformly sequenced core curriculum for all K-12 GA students, but with flexibility to suit local needs Well-defined college-readiness standards in reading, writing, and mathematics needed for success in advanced training, certificate programs, and programs leading to an associate's or bachelor's degree	High Expectations for Students +0.43 (~0.86 years of growth)	<ol style="list-style-type: none"> 1. Using the Learning Criteria to Define Beliefs About Learning 2. Elimination of Prerequisites for Advanced or Accelerated Courses 3. Access to the General Education Curriculum for All Students 4. Inclusion for Special Education Students 5. Lexile and Quantile Measures for All Students in All grades 6. We Teach/Learn Survey 7. Use of College and Career Ready Anchor Standards to Measure Success at Each Grade Level 	Erwin Montessori Elementary School, NC Ravenswood Middle School, WV Ed Von Tobel Middle School, NV James Campbell High School, HI Auburn Career Center, OH

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HS course credit for demonstrated proficiency instead of or in combination with completion of courses of classroom instruction	Providing Formative Evaluation +0.90 (~ 1.7 years of growth)	<ol style="list-style-type: none"> 1. Career Pathway Internship 2. Portfolios 3. Authentic Assessment – Projects/Problem Based Learning 4. Student Rubrics to Guide Performance Rating 5. Elimination of Carnegie Unit for Mastery of Learning 	Wentzville School District, MO Billings Public Schools, MT Hazleton Area School District, PA Duval County Public Schools, FL Cypress Fairbanks School District, TX
	Self-reported Grades +1.44 (~ 2.88 years of growth) Students' estimates and evaluations of their own performance	<ol style="list-style-type: none"> 1. Career Pathway Internship 2. Portfolios 3. Authentic Assessment – Projects/Problem Based Learning 4. Student Rubrics to Guide Performance Rating 5. Elimination of Carnegie Unit for Mastery of Learning 	Brockton HS students, staff know/use R/R concepts New Hampshire Board of Education Cabell County School District, WV AJ Moore Academy, TX Atlantic Community High School, FL
Professional development for teachers that enforce the academically rigorous standards in relevant, project based coursework	Professional Development: +0.62 (~ 1.24 years of growth) Teacher learning opportunities extended over time, used "external experts," directed at improving student achievement, challenged existing assumptions, professional learning communities, supported by leadership	<ol style="list-style-type: none"> 1. Daggett System for Effective Instruction 2. District/School Aligned PD 3. New Teacher Orientation 4. Summer Staff Development Courses 5. Self-Study/Research Opportunities 6. Professional Learning Communities 7. Peer Review 	Moanalua High School, HI Newport High School, WA Muscatine High School, IA La Quinta High School, CA Sparta School K8, NC Polk County, FL Truman High School, MO Kennesaw Mountain High School, GA Forest Grove High School, OR Pasadena High School, TX

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		<ul style="list-style-type: none"> 8. Career Pathways (options to advance to team leader, instructional coach, curriculum coach) 9. Opportunities to attend state and national education conferences and symposiums 10. Professional Affiliation 11. Continuing Education 12. National Board Certification 	
	<p>Problem-solving Teaching +0.61 (~ 1.22 years of growth)</p> <p>Authentic problems used as tools to achieve knowledge and problem solving skills; self-directed learning</p>	<ul style="list-style-type: none"> 1. Implementation of Rigor/Relevance Framework® 2. Quadrant D Instructional Strategies 3. Problem-Based Instructional Strategies 4. Problem Based Lesson Design (GSLs) 	<p>Manor New Technology High School, TX Casco Bay High School, ME Ira A. Murphy Elementary School, AZ Maui High School, HI Chaminade College Preparatory, CA Central Community SD, LA Cabell Midland High School, WV Huntington High School, WV Alvah Scott Elementary, HI South Middle School, MA Polk County School District, FL</p>
	<p>Quality of Teaching +0.44 (~ 0.88 years of growth)</p> <p>Teachers challenge students, setting high expectations, monitoring and evaluating</p>	<ul style="list-style-type: none"> 1. Using the Learning Criteria to Define Beliefs About Student Learning 2. Integration of R/R Framework and The Collaborative Instructional Review 	<p>Paige Unified Schools, AZ Central Community School District, LA Auburn High School, AL SIATech Charter School, FL Crystal River High School, FL Seneca Valley School District, PA</p>

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	student work, value what they teach, foster positive climate, understand their subject, have a problem solving disposition to teaching, respect their students	<ol style="list-style-type: none"> 3. Response to Intervention Programs 4. Inclusion Program for Special Education Students 5. Assessment "Teaching Element" of the Daggett System for Effective Instruction 6. We Learn/Teach Surveys 7. iKnow My Class Survey 8. Integration of the Digital Classroom – PDA, Smartphones 9. Integration of Internet Resources 10. Use of Computer Technology 11. Mastery of Microsoft Applications By Grade 5 12. Online Courses 	<p>Labadieville Middle School, LA Inman Middle School, GA Peoria School District, AZ Butler Technology and Career Development Schools, OH</p>