Results that Matter

21ST CENTURY SKILLS AND HIGH SCHOOL REFORM

Partnership for
21st Century Skills

Partnership for
21st Century Skills

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- American Federation of Teachers
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Executive Summary

Across the country, there is a refreshing and growing movement to improve America's high schools. However, as it is envisioned now in the many admirable initiatives under way in both the public and private sectors, high school reform is not likely to produce graduates who are prepared for the challenges of the modern world.

The reason is straightforward: There has been little or no consideration given to the results that matter for today's high school graduates. Creating high schools that truly will improve learning, achievement and competencies demands a clear understanding of the knowledge, skills and attributes that are increasingly important for every high school student today.

High schools must be designed, organized and managed with a relentless focus on the results that matter in the 21st century — in addition to the traditional metrics of attendance, graduation and college matriculation rates — or they risk missing the mark. Traditional metrics are important, but they are no longer sufficient indicators of student preparedness.

There is broad agreement — and ample evidence, which is highlighted in this report — that for many students, high schools are not working and need to be overhauled. This report presents three fundamental ideas about high schools that are not yet widely perceived:

1. **There are results that matter for high school graduates in the 21st century — and these results are *different* from and go beyond traditional metrics.** Even if every student in the country satisfied traditional metrics, they still would remain woefully under-prepared for success beyond high school.

2. **Improving high schools requires the nation to redefine "rigor" to encompass not just mastery of core academic subjects, but also mastery of 21st century skills and content.** Rigor must reflect *all* the results that matter for all high school graduates today. Today's graduates need to be critical thinkers, problem solvers and effective communicators who are proficient in both core subjects and new, 21st century content and skills. These 21st century skills, which are detailed beginning on page 10, include learning and thinking skills, information and communications technology (ICT) literacy skills, and life skills. Twenty-first century skills are in demand for all students, no matter what their future plans — and they will have an enormous impact on students' prospects.

3. **The results that matter — 21st century skills integrated with core academic subjects — should be the "design specs" for creating high schools that are truly effective for students and the nation.** Only by setting clear goals that incorporate 21st century skills can high schools truly prepare students to succeed in postsecondary education, workplaces and community life.

"Parents, policymakers, business leaders and students themselves are recognizing that too many of our young people do not receive the rigorous, world-class high school education that they need to succeed in the 21st century. Additionally, there is a growing sense of urgency and determination by people at all levels of government to implement some fundamental reforms that will result in significantly better outcomes."

— SUSAN SCLAFANI, Co-Director, America's Choice State Alliance for High Performance, and former Assistant Secretary for Vocational and Adult Education and Counselor to the Secretary at the U.S. Department of Education

The Challenges

This is an ambitious agenda. Yet Americans must focus on achieving the results that matter in high schools, given the staggering educational and economic challenges the nation faces in this century:

- **The nature of education is changing internationally.** The United States no longer can claim that its educational results are unparalleled. Students around the world significantly outperform even the top American students on comparative assessments that measure competence in 21st century skills.
- **The nature of the competition is changing internationally.** The United States no longer can claim that innovation and creativity set Americans apart. Innovators around the world rival Americans in developing breakthroughs that fuel economic competitiveness.
- **The nature of the workforce, jobs and skill demands is changing internationally.** The United States no longer can claim that the American workforce is uniquely qualified. Workers around the world compete head-to-head with Americans.

All of these trends are the prized results of concerted efforts to improve education in nations that have a clear eye on preparing young people for 21st century demands. Americans can do no less.

The ultimate goals of advocates of high school reform and advocates of 21st century skills are the same: to prepare students to succeed and prosper in life, in school and on the job and keep America competitive internationally. To meet these goals, the Partnership for 21st Century Skills believes that school, district and state advocates of high school reform and 21st century skills must work together and leverage one another's ideas and resources.

The Partnership has developed a compelling vision for learning in the 21st century, which represents a consensus among educators, employers, policymakers, parents, students and other stakeholders nationwide. In this report, we will articulate:

- **The challenge for America's high schools**
- **A vision for 21st century learning**
- **Recommendations for connecting 21st century skills and high school reform**
- **Next steps for action**

What Are 21st Century Skills? What Is 21st Century Learning?

For an overview of 21st century skills and 21st century learning, see page 10. To learn more, see our reports:

- *Learning for the 21st Century: A Report and MILE Guide for 21st Century Skills*[1]
- *The Road to 21st Century Learning: A Policymakers' Guide to 21st Century Skills*[2]
- *Assessment of 21st Century Skills: The Current Landscape*[3]

These reports are available on our Web site, www.21stcenturyskills.org.

The Challenge for America's High Schools

There is growing consensus among policymakers, elected officials, business people, K–12 and postsecondary educators, philanthropists, parents, students and the public that American high schools are not successfully preparing all students for success in the 21st century.

By the time they are ready to leave high school, U.S. students should be well prepared for citizenship, work and postsecondary education.

Instead, they fare poorly on national assessments and international comparisons of academic performance, such as the National Assessment of Educational Progress (NAEP), the Trends in International Mathematics and Science Study (TIMSS) and the Programme for International Student Assessment (PISA) — clear indications that our young people may struggle to thrive in an increasingly interdependent and competitive global economy.

Further, students are not acquiring the skills they need to keep the nation competitive. "The skills of the workforce will increasingly be the defining characteristic that determines the extent to which an economy can develop and exploit new technologies and compete in the global marketplace," according to a 2004 RAND report, *The 21st Century at Work: Forces Shaping the Future Workforce and Workplace in the United States*. Knowledge workers in every industry — from nanoscientists to package deliverers — "require high-level cognitive skills for managing, interpreting, validating, transforming, communicating, and acting on information. Valued skills include such nonroutine analytic skills as abstract reasoning, problem solving, communication, and collaboration."[4]

The Facts

Clearly, by many measures, high schools are not moving in the right direction. Consider a few indicators:

- Nearly 40 percent of high school graduates feel inadequately prepared for college or the workplace, according to a 2004 report by the American Diploma Project.[5]
- About one-third of students do not graduate after four years of high school, according to a 2005 report by the Educational Testing Service (ETS).[6]
- Up to 55 percent of college freshmen entering two- and four-year institutions are under-prepared for college-credit coursework and must enroll in remedial courses in reading, writing and mathematics, according to a 2004 report by the National Commission on the NAEP 12th Grade Assessment and Reporting.[7]
- Because they are not well prepared in high school, first-year college students are dropping out of school in alarming numbers: One in four freshmen at four-year institutions and one in two freshmen at two-year institutions fail to return for a sophomore year, according to a 2004 report by ACT.[8]
- Among the many barriers that limit high school students' readiness for college, the Association of American Colleges & Universities (AAC&U) cites "limited interpretations of learning." "Learning is more than the simple acquisition of discrete facts," according to a 2005 AAC&U report, *Greater Expectations: A New Vision for Learning as a Nation Goes to College*. "As students progress through their education, the need for analysis and integration, as well as factual recall, increases. In high school and college, students need to know facts, but even more importantly how to interpret and what to do with those facts. Information is transformed into internal knowledge as students apply their understandings to new situations, new problems, and new environments, thereby using their previous learning in challenging ways."[9]
- 84 percent of employers say K–12 schools are not doing a good job of preparing students for the workplace, according to a 2005 survey for the National Association of Manufacturers: 55 percent say schools are deficient in preparing students with basic employability skills (such as attendance, timeliness and work ethic); 51 percent cite math and science deficiencies; and 38 percent cite reading and comprehension deficiencies.[10]

In response to indicators like these, many high school reform initiatives aim to keep more students in school, enroll them in more challenging classes and, as a result, raise high school graduation and college matriculation and retention rates.

These are important goals. Yet even if every high school in the country achieved these goals, high school graduates would remain woefully lacking in preparation for the world. Without 21st century skills, young adults will struggle to make informed life choices, participate effectively in civic life and compete in the global economy.

A DIFFERENT WORLD

High school reform initiatives must take into account that the demands of the 21st century are profoundly *different* today than even a decade ago:

- **The nature of education is changing internationally. The United States is falling behind on critical international comparisons of educational performance, particularly when it comes to higher-level thinking and problem-solving skills.**

On the 2003 PISA exam in mathematics, for example, U.S. 15-year-old students ranked 24th out of 29 countries that belong to the Organisation for Economic Co-operation and Development (OECD). The U.S. ranking in math problem solving in practical, real-world situations — which goes beyond the mastery of mathematics techniques conventionally taught in U.S. schools — was tied with Spain, Portugal and Italy and ahead of only Greece, Turkey and Mexico. American students ranked well behind students in the highest-performing countries, Finland, Japan and Korea.[11]

These results are highly relevant both to students' career prospects and the nation's economic vitality. "Research demonstrates that the skills measured on [PISA and TIMSS] are important in the labor market and have a substantial effect on national growth rates," according to Eric Hanushek, an economist at Stanford University. "Existing evidence indicates that the scores' importance to national growth is hard to overstate."[12]

Many countries around the world have gotten this message. They are investing massively in educational outcomes that rival the best that American schools have to offer. These countries are leapfrogging past traditional educational practices and focusing on 21st century skills.

In fact, education ministries and major education-oriented NGOs throughout Western and Northern Europe, East Asia, Australia and the Pacific Rim are treating 21st century skills as core skill areas to be addressed by national education systems, according to the Partnership's 2005 report, *Assessment of 21st Century Skills: The Current Landscape*. The elevation of 21st century skills to centrality in national curricula in countries as diverse as the United Kingdom, Finland, Singapore and Israel has been fueled, in part, by a new understanding that these skills help students develop and display the kinds of higher-order thinking skills that are increasingly important in the global economy.[13]

These wakeup calls should be spurring U.S. policymakers to develop the deep conceptual knowledge, critical-thinking and problem-solving skills that both PISA and TIMSS measure.[14] Instead, while the No Child Left Behind law focuses on the reasonable goal of improving achievement among the lowest-performing U.S. students, the nation has yet to acknowledge that we also need to set much higher standards for all students.

Just as other countries are doing, the United States needs to focus on both goals at once — boosting the performance of low-performing students through improvement of basic instruction *and* dramatically raising the bar for student achievement overall. This is not an either–or agenda: The consensus around the world is that 21st century skills foster basic *and* higher-level learning among even the lowest-performing students. Indeed, the top-performing nations rank high on PISA and TIMSS because they imclude higher-order skills along with basic skills in a balanced instructional approach.[15]

- **The nature of the competition is changing internationally. Although the United States historically has been a world leader in offering broad access to higher education, many other countries now provide comparable access — and results. The graduates in these countries are in direct competition for jobs with U.S. graduates. The United States no longer holds a corner on the market for highly qualified workers.**

For example, the proportion of the college-age population that earned degrees in science and engineering fields, which are indispensable to economic growth, were substantially larger in more than 16 countries in Asia and Europe than in the United States in 2000, according to the National Science Foundation's 2004 *Science & Engineering Indicators*.[16]

Americans tend to dismiss such indicators with the notion that the United States remains the prime innovator in the world. Yet 48 percent of the U.S. patents granted in 2004 were of foreign origin, according to the U.S. Patent and Trademark Office. That share has been increasing steadily for years — from 18 percent in 1964 … to 33 percent in 1974 … to 42 percent in 1984 … to 43 percent in 1994.[17]

The United States is no longer alone in understanding and capitalizing on the direct relationship between innovation and economic growth. Many countries now are focusing aggressively on turning their schools and industries into hotbeds of creativity, imagination and innovation — the areas in which economies will win or lose.

"[There] is a certain American confidence that whatever we lack in preparing our kids with strong fundamentals in math and science, we make up for by encouraging our best students to be independent, creative thinkers.

There is a lot of truth to that. Even the Chinese will tell you that they've been good at making the next new thing, and copying the next new thing, but not imagining the next new thing. That may be about to change. Confident that its best K–12 students will usually outperform America's in math and science, China is focusing on how to transform its classrooms so students become more innovative."[18]

— Thomas L. Friedman, *New York Times*

- **The nature of the workforce, jobs and skill demands is changing internationally. Industrial workers were measured for their *efficiency* at getting the job done, according to the Education Trust. The value-added of knowledge workers is effectiveness, which requires a very different skill set.[19]**

Many companies recruit workers with a variety of 21st century skills that are not reflected in any way in most traditional high schools. Microsoft, for example, has built "competency wheels" that spell out 32 workplace skills that the corporation values. Only three of these are related to technology.

There are wide gaps between the skills that businesses value and the skills most graduates actually have. For example, 80 percent of employers in the fastest-growing industries assess writing as part of the hiring process, according to a 2004 report of the National Commission on Writing in America's Schools and Colleges.[20] Yet more than 75 percent of 12th graders are not proficient in writing, according to the 2002 NAEP.[21]

Today's workers also require more education than ever before. Of the 30 fastest-growing occupations in the U.S. Bureau of Labor Statistics' 2006–07 Occupational Outlook Handbook, only three list short-term, on-the-job training as the most significant source of postsecondary education or training. Most require more: Eight require associate's degrees, 10 require bachelor's degrees and two require doctoral degrees.[22]

In short, high schools face broad and deep challenges, ones that high school reform initiatives must address if they are to be successful.

"Fewer then one in 10 adults believe that students are being significantly challenged in high school. Half think that the secondary education system needs either major changes or a complete overhaul. And more than three-quarters of adults believe that the United States will be less competitive 25 years from now unless high schools improve."[23]

— *Ready for the Real World? Americans Speak on High School Reform*, a 2005 ETS report

High Schools Designed for Results that Matter

High school reform initiatives must embrace a meaningful and ambitious agenda — preparing all students with the knowledge and skills that will truly prepare them to thrive.

This is an issue of urgent importance: Our international competitiveness and quality of life are in jeopardy unless we make rapid progress. It's a challenge that the nation has undertaken successfully in the past — to meet the imperatives of the age of science and mathematics after the Sputnik launch, for example. And it is a challenge that we cannot afford to ignore today.

Recent initiatives by the U.S. Department of Education, the National Governors Association, the Bill and Melinda Gates Foundation, the U.S. Conference of Mayors and other prominent organizations have focused attention on the nation's high schools — and the urgent national priority of making a high school education rigorous, meaningful and relevant in our changing global context.

The Partnership applauds these efforts. At the same time, we believe that unless high school redesign initiatives anticipate the 21st century knowledge and skills that all students need to succeed and function ethically in civic life, higher education and the workforce, they will miss their mark. The American high school of the future must be designed and organized for 21st century learning and achievement, in addition to the traditional metrics of attendance, graduation and college matriculation rates. These metrics are important, but they are no longer in and of themselves sufficient indicators of student preparedness.

We shouldn't design another high school until we've agreed on the knowledge, skills and attributes that matter today: 21st century skills should become the design specs for every American high school.

High schools cannot begin to take on the work of redesigning expectations, buildings or schedules without first determining the results that matter. This should be the first step — not an afterthought — in the high school reform movement. The results that matter should shape every aspect of modern high schools.

We now understand the content knowledge and the skill sets that all students need to learn, which include both core subject mastery and 21st century knowledge and skills (summarized in the next section). Students should be acquiring 21st century knowledge and skills intentionally and purposefully in the context of learning academic content. By working together to couple these meaningful outcomes with strategies to improve high schools, we can be more effective in preparing students for the future.

A Vision for 21st Century Learning

The Partnership for 21st Century Skills has developed a unified, collective vision for 21st century learning that can be used to strengthen American high schools.

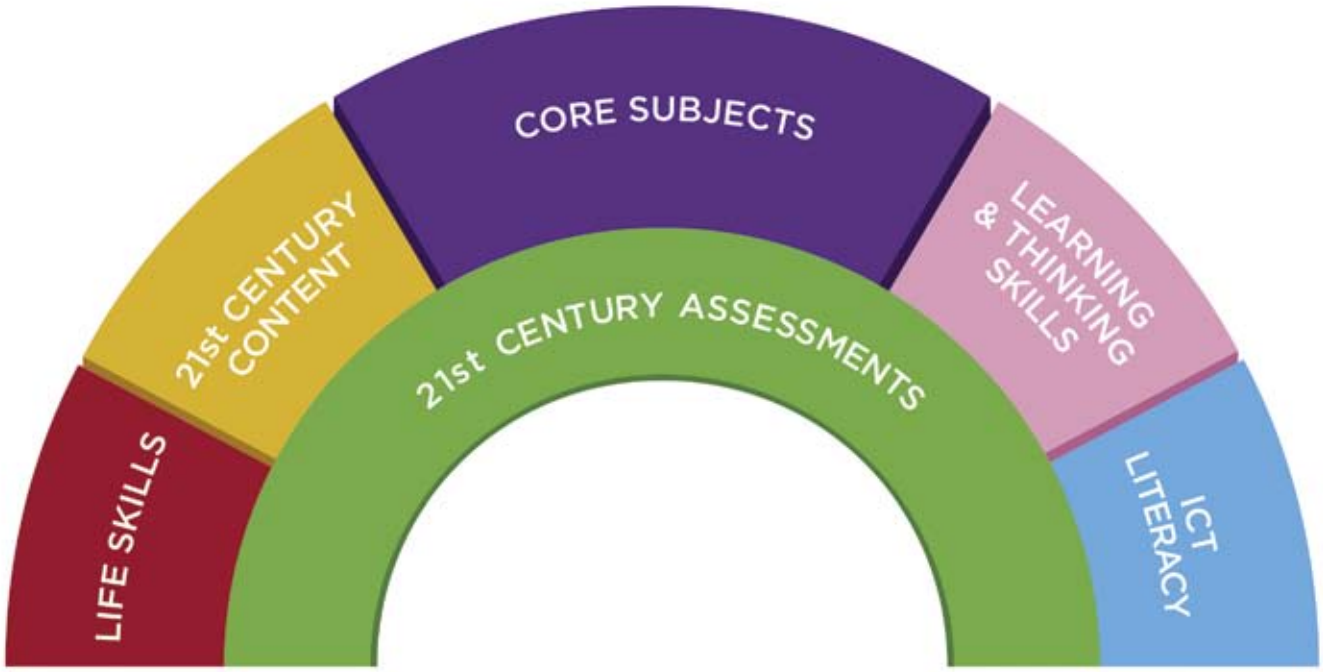
This vision is the result of a sustained, comprehensive effort to create a shared understanding and common language for education. To develop this vision, the Partnership conducted extensive research on 21st century skills, sponsored a National Forum on 21st Century Skills and held outreach sessions with educators, employers, parents, community members and students. The Partnership has refined this vision at annual summits.

In the course of this multiyear process, thousands of key stakeholders and citizens across the country have contributed their insights about the results that matter. There is strong support for infusing 21st century skills into education. Good educators have been waiting to take on this work, which will make high schools more meaningful, engaging and relevant, for many years. The Partnership has identified six key elements of 21st century learning:

1. **Core subjects.** The No Child Left Behind Act of 2001, which reauthorizes the Elementary and Secondary Education Act of 1965, identifies the core subjects as English, reading or language arts; mathematics; science; foreign languages; civics; government; economics; arts; history; and geography.

2. **21st century content.** Several significant, emerging content areas are critical to success in communities and workplaces. These content areas typically are not emphasized in schools today:
   - Global awareness
   - Financial, economic, business and entrepreneurial literacy
   - Civic literacy
   - Health and wellness awareness

3. **Learning and thinking skills.** As much as students need to learn academic content, they also need to know how to keep learning — and make effective and innovative use of what they know — throughout their lives. Learning and thinking skills are comprised of:
   - Critical-thinking and problem-solving skills
   - Communication skills
   - Creativity and innovation skills
   - Collaboration skills
   - Contextual learning skills
   - Information and media literacy skills



4 **ICT literacy.** Information and communications technology (ICT) literacy is the ability to use technology to develop 21st century content knowledge and skills, in the context of learning core subjects. Students must be able to use technology to learn content and skills — so that they know *how* to learn, think critically, solve problems, use information, communicate, innovate and collaborate.

5 **Life skills.** Good teachers have always incorporated life skills into their pedagogy. The challenge today is to incorporate these essential skills into schools deliberately, strategically and broadly. Life skills include:

- Leadership
- Ethics
- Accountability
- Adaptability
- Personal productivity
- Personal responsibility
- People skills
- Self-direction
- Social responsibility

6 **21st century assessments.** Authentic 21st century assessments are the essential foundation of a 21st century education. Assessments must measure all five results that matter — core subjects; 21st century content; learning and thinking skills; ICT literacy; and life skills.

To be effective, sustainable and affordable, assessments must use modern technologies to increase efficiency and timeliness. Standardized tests alone can measure only a few of the important skills and knowledge students should learn. A balance of assessments, including high-quality standardized testing along with effective classroom assessments, offers students a powerful way to master the content and skills central to success.

Redefining Rigor for the 21st Century

Many high school reform advocates call for students to learn a rigorous core curriculum, especially advanced courses in English, mathematics and science. The Partnership supports this stance. Students who enroll in more challenging classes are better prepared for postsecondary education and careers.

At the same time, the Partnership believes that "rigor" must be redefined to encompass 21st century skills and content as well, which should be infused throughout the curriculum. Integrating 21st century skills into teaching and learning will make core subjects more rigorous, as the results of TIMSS, PISA and other international assessments make clear. Learning and thinking skills, ICT literacy and life skills are not "soft skills," nor do these skills develop automatically in the course of mastering core academic content. Rather, 21st century skills are the powerful means by which students make effective use of their content knowledge. Further, these skills need to be taught explicitly, right along with core subjects.

If high schools incorporate all six elements of a 21st century education, students will indeed have a rigorous, meaningful and relevant education.

Employers, educators and policymakers agree that the skills necessary for entering postsecondary education today are virtually the same skills necessary for success in the modern workplace. The results that matter apply to all students.

Recommendations

FOR CONNECTING 21ST CENTURY LEARNING & HIGH SCHOOL REFORM

The success of high school reform depends upon the collective leadership of numerous entities, from government to education institutions to advocacy organizations.

There are strong affinities among the goals of high school redesigners and proponents of the Partnership's vision for 21st century learning. The business, education, policymaking and youth development communities should address the urgent need for improved high schools and 21st century learning in a single, coherent and comprehensive effort. These priorities are mutually supportive; to do less causes fragmentation and confusion.

We believe there are five promising ways that advocates of high school reform and advocates of 21st century skills can work together to achieve results that matter for all students:

1 Design high schools to prepare all students with 21st century knowledge and skills.

High schools will be most effective in educating students if new designs — or redesigns — are based explicitly on specific student outcomes and attributes that are valued in the world today. Outcomes should drive change. Every student should graduate from high school prepared to thrive in the 21st century, whether they go on to college or career preparation or the workplace. This preparation should include:

- Mastering core subjects by using learning and thinking skills, which will make high school education truly rigorous.

  Proficiency in core subjects — especially English, mathematics and science — is necessary, but not sufficient. In the 21st century, proficiency means mastery of skills as well as mastery of content. Skilled use of core content is the desired outcome of a high school education. In fact, lack of proficiency in learning and thinking skills holds American students back on international assessments, such as PISA and TIMSS. When American students are asked to apply conceptual knowledge to critical thinking and problem solving, they are less competent than students in many other countries.

- Mastering 21st century content that is relevant in the world today.
- Acquiring ICT literacy in the context of learning core subjects. Students must be able to use technology to help them learn, think critically, solve problems, use information, communicate, innovate and collaborate.
- Mastering the life skills that are increasingly essential for success in the world today. Students must learn how to guide their personal, civic and professional choices.
- Demonstrating knowledge and skills on meaningful 21st century assessments that reflect real-world challenges.

Every aspect of high school education must be designed, organized and managed with these results front and center.

2 Fully and strategically integrate 21st century knowledge, skills and assessments into high schools.

Given the results that matter today for high school graduates, academic standards are too low and inadequate to reflect 21st century knowledge and skills.

Many states and school districts allow students to earn a high school diploma with 8th- or 10th-grade knowledge and skills — or less — in core subjects. Higher standards are essential. Students should master 12th-grade

knowledge and skills before they leave high school. Twenty-first century content, learning and thinking skills, ICT literacy and life skills must be incorporated into the curriculum as well.

Accreditation policies should reflect high schools' performance in helping students achieve the results that matter. In addition, the Carnegie unit of accreditation of course taking, which is outdated, must be revisited. The Carnegie unit measures seat time, not proficiency, so it does not reflect the results that matter.

3 Require high school students to demonstrate achievement of 21st century knowledge and skills.

With 21st century assessments, we must measure what we value.

There is growing, worldwide interest in creating modern assessments that measure students' proficiency in 21st century skills. Assessments are especially important because they can help drive high school reform. This is an area that can make an enormous difference in moving high schools toward delivering a 21st century education.

Twenty-first century skills should be fully integrated into the teaching and learning of the entire high school curriculum — updating and refocusing core subjects, not as an add-on subject area — and then assessed within this context.

The Partnership for 21st Century Skills is in the midst of an assessment project that can contribute to this effort. We believe our initial work and subsequent projects will be valuable for measuring students' full range of knowledge, skills and abilities.

In 2005, the Partnership released a thorough survey of international efforts to modernize assessments, along with a set of recommendations related to the assessment of 21st century skills. *Assessment of 21st Century Skills: The Current Landscape*, along with Assess 21, an online database of 21st century skills assessments, are available on our Web site at www.21stcenturyskills.org.

As highlighted in the *Assessment of 21st Century Skills* report, promising initiatives in the United States and abroad include:

- **Critical-Thinking, Problem-Solving and Communications Assessment.**

The Collegiate Learning Assessment Project is developing an assessment that focuses on critical-thinking, problem-solving and communication skills — results that matter in high school and at the postsecondary level. In a timed assessment in a simulated environment, students are expected to cull through data and develop cogent, coherent essays. The assessment measures

Principles for High School Reform

The Partnership for 21st Century Skills and a number of organizations agree on a set of principles stressing the importance of 21st century learning in high school redesign:

- **Partnership for 21st Century Skills**
- **Consortium for School Networking (CoSN)**
- **Council of Chief State School Officers (CCSSO)**
- **Council on Aid to Education**
- **Education Commission of the States (ECS)**
- **Education Development Center, Inc.**
- **Forum for Youth Investment**
- **National Association of State Boards of Education (NASBE)**
- **National School Boards Association (NSBA)**
- **NetDay**
- **New Technology Foundation**
- **North American Council for Online Learning (NACOL)**
- **North Carolina Business Committee for Education**
- **North Carolina New Schools Project**
- **North Carolina State Board of Education**
- **North Central Association**
- **Southern Association for Colleges and Schools**
- **Roads to Success**
- **State Educational Technology Directors Association (SETDA)**
- **United States Conference of Mayors**
- **West Virginia Department of Education**

For the complete Statement of Principles for 21st Century Skills and High School Reform, see page 20.

such skills as distinguishing facts from opinions, rational from emotional arguments, relevant from irrelevant information, correlation from cause and effect. Students are expected to synthesize information from different sources to make sense of the data by constructing an argument or interpreting information, for example.

http://www.cae.org/content/pro_collegiate.htm

- **Key Stage 3 Assessment.**

  The United Kingdom is developing an online assessment to measure ICT literacy among 7th, 8th and 9th graders. The assessment, which will be required for every student in 2008, features simulated tasks of increasing complexity. The Office of Standards in Education expects this assessment to drive the integration of ICT literacy into all core subjects, so that 85 percent of 14-year-olds are proficient in ICT literacy by 2009.

  http://www.qca.org.uk/2914.html

- **ICT Literacy Assessment.**

  ETS has created a 75-minute ICT Literacy Assessment for high school and college students. Students interact with simulated software, such as e-mail, a Web browser and a library database, to complete short, four-minute tasks and a longer, 15-minute task. The assessment measures students' abilities to define, access, evaluate, integrate, manage, create and communicate. The tasks include content from the humanities, social sciences, natural science, practical affairs and popular culture, which may be situated in academic, business or personal contexts.

  http://www.ets.org/ictliteracy

Assessing Results that Matter

New Technology High School in Napa, Calif., has pioneered ways to assess students on results that matter. To assess eight learning outcomes — curricular literacy (content standards), collaboration, critical thinking, oral communication, written communication, career preparation, citizenship and ethics, and technology literacy — the school uses digital, Web-based tools that feature detailed rubrics and online grade reports for evaluating and giving students feedback on progress, such as academic content mastery; critical-thinking, presentation, communication and collaboration skills; and work ethic and effort.

IN NORTH CAROLINA

The Nation's First Center for 21st Century Skills

In April 2005, North Carolina announced the creation of the nation's first Center for 21st Century Skills, a public-private collaborative supported by the North Carolina Business Committee for Education (NCBCE) focused on the vision that all students will graduate from high school with the knowledge and skills needed for success in a 21st century global society.

NCBCE and the center recently gathered input from North Carolina businesses about the skills and qualities they value in potential employees. The center and the Partnership for 21st Century Skills are working with the North Carolina Department of Public Instruction to update high school standards to include 21st century skills. The center also is supporting creation of an online high school assessment of 21st century skills related to biology in partnership with the Institute for Science Learning at the University of North Carolina at Chapel Hill. Additionally, the North Carolina State Board of Education is reviewing high school graduation requirements and has instituted a senior project that will require use of 21st century tools, content and context.

"The center is working with key high school initiatives in North Carolina to ensure that — in addition to rigor, relevance and relationships — our high schools also provide students with the 21st century skills required to compete globally and live fulfilling lives."

— Tricia Willoughby, Executive Director of NCBCE

IN WEST VIRGINIA

Planning for Student Success in High School

In November 2005, West Virginia became the second state in the nation to embrace the Partnership's framework for 21st century learning. The state's plans for promoting 21st century skills in high schools include:

- Revising content standards to align with 21st century skills
- Assessing students' ICT literacy
- Developing a 21st century "credential" for high school graduates
- Developing a "Framework for High-Performing High Schools" that will be the basis of a 10-day professional development program for all high school principals.

"Teaching our high school students 21st century skills is no longer an option, it is a necessity."

— Steven L. Paine, West Virginia Superintendent of Schools

4 Improve professional development in 21st century skills.

Educators need much better pre-service and in-service training that focuses on teaching and measuring 21st century skills. Teachers need to learn how to incorporate learning and thinking skills into core subjects.

Teachers will need ongoing education and training, which will complement the work they are already doing, to prepare students with the new knowledge and skills that are relevant today in our growing global society. Professional development should create a culture of collaborative learning communities for educators and students.

Educators should work with organizations that represent teachers of core subjects, including English, science, mathematics and social studies, so that 21st century skills are addressed in their professional development initiatives.

For pre-service training, higher education admission and placement standards for teachers should be evaluated to reflect the results that matter in education today. Higher education institutions should be part of the high school reform movement, so they understand and contribute to the vision and results of 21st century learning.

For in-service training, every state should infuse 21st century skills into professional development, whether they use their current structures or create new ones. For example, states could create 21st Century Teaching Academies, where teachers could develop and renew 21st century skills and pedagogy in structured programs.

States also should consider connecting teacher and principal certification, licensure and compensation to proficiency in both core subjects and 21st century skills.

5 Partner with the business community and community-based organizations.

High school students can — and should — acquire 21st century skills not only in the classroom, but also in the community. Students spend only a limited portion of their time in school, but the world beyond the classroom can offer significant teaching and learning opportunities as well.

Educators and states should partner with the business community and community-based organizations to develop a broad consensus on the 21st century skills they value. They should jointly implement a strategy to help high school students acquire 21st century skills, both in traditional educational settings and outside of school, including workplace experiences and after-school activities.

Building 21st Century Skills into Professional Development

Through its Digital-Age Literacy Initiative, the Metropolitan School District of Lawrence Twp., Ind., is systematically training all of its 1,100 teachers to modernize their instructional practices to help students reach proficiency in seven key areas: basic reading, writing and numeracy; technological, informational and visual literacy; self-direction; higher-order thinking; and cultural competence. Master teachers serve as coaches to principals and teachers, who use detailed rubrics the district has developed for evaluating progress.

In high schools, this initiative has made the biggest impact on struggling readers — about a third of freshman who enter high school reading far below grade level. Students in the district's developmental reading class are showing dramatic improvement in reading achievement, often by as much as two or three grade levels a year. Before teachers incorporated instruction in such skills as inquiry-based learning, higher-order thinking and self-direction into this class, student performance didn't budge.

In August 2006, the district will push its focus on 21st century skills further by opening a charter high school, Lawrence Early College High School for Science and Technologies, with the Ivy Tech Community College of Indiana. The school will be Indiana's first early college high school.

https://www.ltschools.org

"Our students learn core subjects by using 21st century skills."

— Troy Knoderer, Digital-Age Literacy Coordinator, Metropolitan School District of Lawrence Twp., Ind.

Next Steps for Action

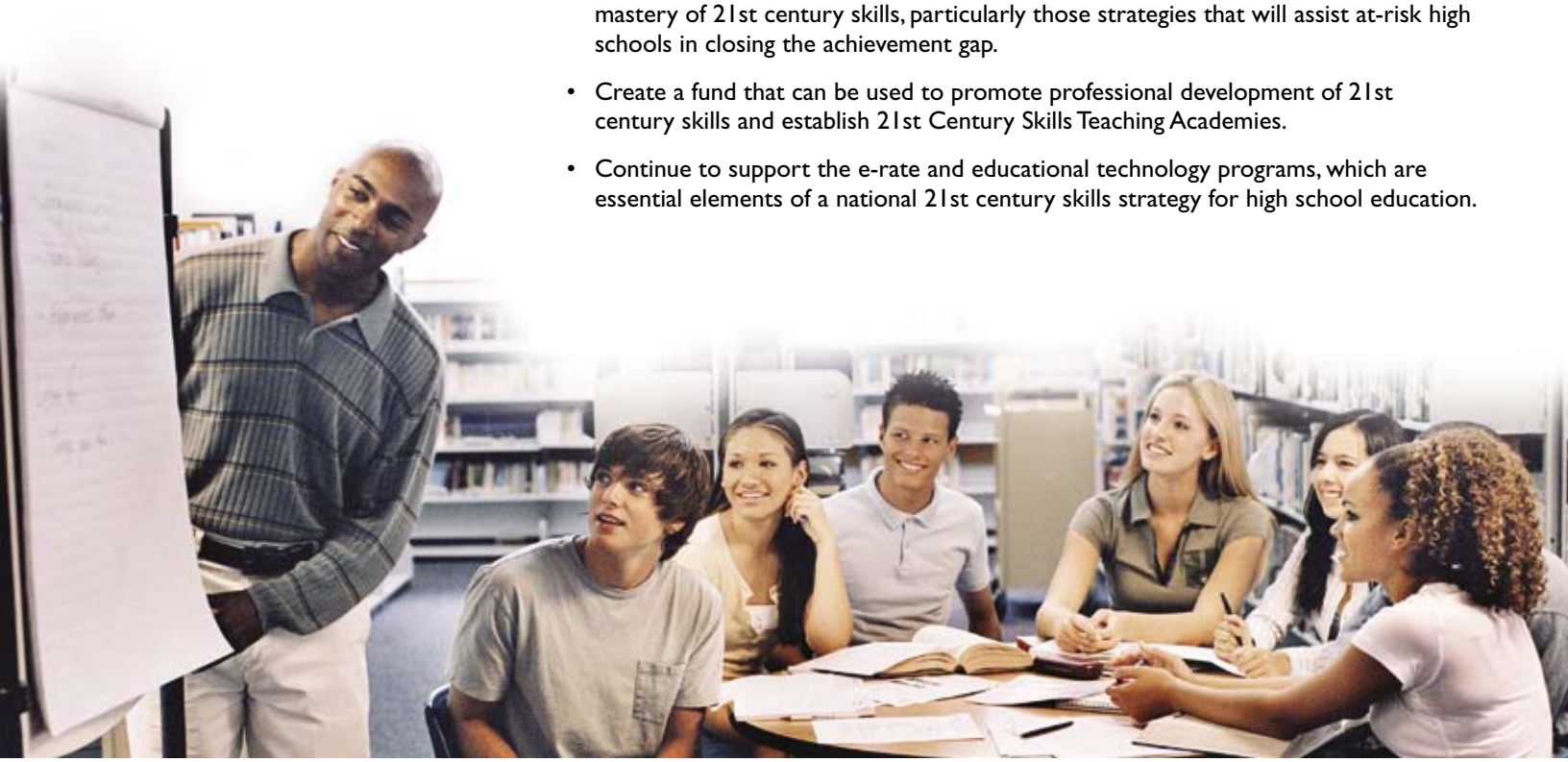
True reform of our nation's high schools requires a collaborative effort among all stakeholders, along with a shared vision that high schools must be positioned to produce results that matter. Each stakeholder has a specific role to play in furthering the national dialogue and creating real results for U.S. high school students.

The Partnership offers the following action steps in the hope that these suggestions will spur thought, discussion and action toward this vision. These opportunities for action should be considered as potential starting points by each stakeholder group as part of comprehensive school reform efforts.

Federal Government

The federal government must lead a national conversation and create momentum for integrating 21st century skills into high school education. Federal policymakers should:

- Provide national leadership to heighten national and state awareness of 21st century skills and urge policymakers at every level to include 21st century skills in state standards, professional development and assessment.
- Make 21st century skills a central feature of any high school reform proposal and of the reauthorization of the Elementary and Secondary Education Act/No Child Left Behind.
- Fund an international benchmarking project that allows U.S. high school students to be compared to their international peers in terms of competencies in 21st century skills.
- Fund pilot projects and test beds for the use of assessments that measure 21st century skill competencies in high school students.
- Include 21st century skills in all 12th-grade NAEP frameworks and standards.
- Create pilot studies and disseminate best practices that best facilitate student mastery of 21st century skills, particularly those strategies that will assist at-risk high schools in closing the achievement gap.
- Create a fund that can be used to promote professional development of 21st century skills and establish 21st Century Skills Teaching Academies.
- Continue to support the e-rate and educational technology programs, which are essential elements of a national 21st century skills strategy for high school education.



State Government

- Create a statewide public education campaign to inform students, parents and educators on the importance and economic imperative of integrating 21st century skills into high school education.
- Incorporate 21st century skills into state standards and assessments, and ensure alignment exists between these standards and assessments.
- Build 21st century skills into existing state-mandated high school graduation requirements.
- Encourage pilot projects and test beds for the use of assessments that measure 21st century skill competencies in high school students.
- Disseminate best practices that best facilitate student mastery of 21st century skills, particularly those strategies that will assist at-risk high schools in closing the achievement gap.
- Develop teacher training and professional development programs that emphasize the incorporation of 21st century skills in every core subject.
- Provide leadership training for superintendents and principals for infusing and supporting 21st century skills in districts and schools.
- Certify and reward teachers based in part on their demonstrable acquisition and application of 21st century skills.
- Design high school facilities that enable and enhance the attainment of 21st century skills outcomes for each high school student.
- Provide state funding for 21st century skills research and development, as well as professional development for teachers.
- Use the 21st century skills framework to create high school reform initiatives that are aligned with student outcomes that matter.

School Districts and Local Leaders

- Create a teacher professional development strategy for 21st century skills that prepares teachers to teach the full range of skills using the best practices available; consider identifying a teacher mentor in each district and providing time for teachers to collaborate and participate in learning communities.
- Use a full range of assessments, including high-stakes and classroom assessments, to measure 21st century skills.
- Use senior-year projects and student portfolios as methods of teaching and assessing 21st century skills.
- Provide career awareness and internships that offer opportunities to learn beyond the classroom.
- Collaborate with community organizations, businesses and higher education institutions to establish consensus on the 21st century skills needed in the community.
- Collaborate with youth development programs and the after-school community, outside of traditional K–12 institutions, on complementary strategies to support 21st century skills in traditional school settings and out-of-school programs.

Higher Education

- Craft a 21st century teaching agenda that includes continual evaluations of the tools and skills teachers need to create classrooms that foster 21st century learning.
- Foster an overall commitment to ensure that all pre-service teachers graduate prepared to employ 21st century teaching and assessment strategies in their classrooms.
- Create a research plan for charting the best practices for teaching and assessing 21st century skills; collaborate in researching and developing authentic new assessments for high school students.
- Invest in infrastructure that will make it possible for education faculty and pre-service teachers to acquire 21st century skills.
- Form collaborative work groups with local districts and the state to support 21st century learning.
- Define the 21st century skills needed by high school students who are entering higher education.

Business, Community and Nonprofit Organizations

- Work with local boards of education and community leaders to publicly articulate the need for high school graduates who possess 21st century skills.
- Support a public awareness campaign to build understanding of the significant need for a 21st century education for all high school students.
- Encourage employees to be advisors, mentors or tutors to high school students; provide real-world experience to high school students through meaningful internships.
- Create career and 21st century skills awareness programs for high school students.
- Share business resources — such as technology-enabled learning spaces, classrooms and/or training facilities — with local high schools.
- Make workplaces available to educators to help them deepen their understanding of workforce demands and the importance of 21st century skills in real-world work situations.
- Engage with nationally recognized accrediting agencies to include presence of student instruction in 21st century skills as a requirement in high school curriculum.
- Work with traditional K-12 schools on providing a coordinated strategy for school and out-of-school opportunities to promote 21st century skills.

Conclusion

The advocates of high school reform and 21st century skills share common goals and common ground.

We all want high schools to do a better job of preparing students to meet the challenges they will face in postsecondary education, careers and communities. We all know that students need to learn at higher levels. And they need different skill sets for an economy that increasingly runs on information, knowledge and innovation.

We also know that this is not merely an academic exercise. Improving the value of a high school education is of fundamental importance to improving our national competitiveness and quality of life in the future. It's an urgent priority that deserves a concerted, unified effort.

The results that matter should drive high school reform. High schools can achieve meaningful change only if they prepare students to succeed.

The Partnership for 21st Century Skills is ready to work collaboratively with high school reform advocates to improve high schools, starting now.

APPENDIX

Statement of Principles

The following organizations have embraced these principles:

- **Partnership for 21st Century Skills**
- **Consortium for School Networking (CoSN)**
- **Council of Chief State School Officers (CCSSO)**
- **Council on Aid to Education**
- **Education Commission of the States (ECS)**
- **Education Development Center, Inc.**
- **Forum for Youth Investment**
- **National Association of State Boards of Education (NASBE)**
- **National School Boards Association (NSBA)**
- **NetDay**
- **New Technology Foundation**
- **North American Council for Online Learning (NACOL)**
- **North Carolina Business Committee for Education**
- **North Carolina New Schools Project**
- **North Carolina State Board of Education**
- **North Central Association**
- **Southern Association for Colleges and Schools**
- **Roads to Success**
- **State Educational Technology Directors Association (SETDA)**
- **United States Conference of Mayors**
- **West Virginia Department of Education**

Overview

There is growing consensus among policymakers, elected officials, business people, K–12 and postsecondary educators, philanthropists, parents, students and the public that American high schools are not successfully preparing all students for success in the 21st century.

By the time they are ready to leave high school, U.S. students should be well prepared for citizenship, work and postsecondary education. Instead, they fare poorly on national assessments and international comparisons of academic performance, such as the National Assessment of Educational Progress (NAEP), the Trends in International Mathematics and Science Study (TIMSS) and the Programme for International Student Assessment (PISA) — clear indications that our young people may struggle to thrive in an increasingly interdependent and competitive global economy.

Further, students are not acquiring the skills they need to keep the nation competitive. "The skills of the workforce will increasingly be the defining characteristic that determines the extent to which an economy can develop and exploit new technologies and compete in the global marketplace," according to a 2004 RAND report, *The 21st Century at Work: Forces Shaping the Future Workforce and Workplace in the United States*. Knowledge workers in every industry — from nanoscientists to package deliverers — "require high-level cognitive skills for managing, interpreting, validating, transforming, communicating, and acting on information. Valued skills include such nonroutine analytic skills as abstract reasoning, problem solving, communication, and collaboration."[24]

Recent initiatives by the U.S. Department of Education, the National Governors Association, the Bill and Melinda Gates Foundation, the U.S. Conference of Mayors and other prominent organizations have focused attention on the nation's high schools — and the urgent national priority of making a high school education rigorous, meaningful and relevant in our changing global context.

We applaud these efforts. At the same time, we believe that unless high school redesign initiatives anticipate the 21st century knowledge and skills that all students need to succeed and function ethically in civic life, higher education and the workforce, they will miss their mark. The American high school of the future must be designed and organized for 21st century learning and achievement, in addition to the traditional metrics of attendance, graduation and college matriculation rates. These metrics are important, but no longer sufficient, indicators of student preparedness.

There are three fundamental ideas about high schools that are not yet widely perceived:

- **There are results that matter for high school graduates in the 21st century — and these results are *different* from and go beyond traditional metrics.**

  Even if every student in the country satisfied traditional metrics, they still would remain woefully under-prepared for success beyond high school.

- **Improving high schools requires the nation to redefine "rigor" to encompass not just mastery of core academic subjects, but also mastery of 21st century skills and content.**

  Rigor must reflect *all* the results that matter for all high school graduates today. Today's graduates need to be critical thinkers, problem solvers and effective communicators who are proficient in both core subjects and new, 21st century content and skills. These 21st century skills (summarized below) are in demand for all students, no matter what their future plans — and they will have an enormous impact on students' prospects.

- **The results that matter — 21st century skills integrated with core academic subjects — should be the "design specs" for creating high schools that are truly effective for students and the nation.**

  Only by setting clear goals that incorporate 21st century skills as outcomes can high schools truly prepare students to succeed in postsecondary education, workplaces and community life.

Principles

We believe that 21st century learning is critical to high school redesign. We believe:

1 Advocates of high school redesign and 21st century learning should work together to support each other's efforts.

There are strong affinities among the goals of high school redesigners and proponents of the Partnership's framework for 21st century learning. The business, education and policymaking communities should address the urgent need for improved high schools and 21st century learning in a single, coherent and comprehensive effort. These priorities are mutually supportive; to do less causes fragmentation and confusion.

2 High schools should prepare all students with 21st century knowledge and skills.

The Partnership has identified six key elements of 21st century learning:

- **Core subjects**, identified by No Child Left Behind as English, reading or language arts; mathematics; science; foreign languages; civics; government; economics; arts; history; and geography.
- **21st century content**, including global awareness; financial, economic, business and enterpreneurial literacy; civic literacy; and health and wellness awareness.
- **Learning and thinking skills**, including critical-thinking and problem-solving skills; communication skills; creativity and innovation skills; collaboration skills; contextual learning skills; and information and media literacy skills.
- **ICT (information and communications technology) literacy**, which is the ability to use technology to develop 21st century content knowledge and skills in the context of learning core subjects. Students must be able to use technology to help them learn, think critically, solve problems, use information, communicate, innovate and collaborate.
- **Life skills**, including leadership; ethics, accountability; adaptability; personal productivity; personal responsibility; people skills; self-direction; and social responsibility.
- **Use authentic 21st century assessments** that measure 21st century skills and knowledge.

To be successful, productive citizens and workers, students need a 21st century education that incorporates these six key elements.

3 High school students should demonstrate achievement of 21st century knowledge and skills.

Twenty-first century knowledge and skills should be fully integrated into the teaching and learning of the entire high school curriculum — updating and refocusing core subjects, not as an add-on subject area — and then assessed within this context. Currently, the Partnership is in the midst of an important new initiative on assessment of 21st century skills. We believe our initial work and subsequent projects will be valuable for measuring students' full range of knowledge, skills and abilities.

4 High school designs should fully and strategically integrate 21st century knowledge, skills and assessments.

High schools will be most effective in educating students if new designs — or redesigns — are based explicitly on specific student outcomes and attributes that are valued in the world today. Outcomes should drive change. The Partnership has created a vision for education that is compelling, widely supported and relevant to high school reform initiatives.

5 Professional development in 21st century skills is critical for success.

Educators need support in helping high school students meet 21st century expectations. Teacher preparation programs should prepare teachers to teach students effectively in the modern world. Teachers will need ongoing education and training, which will complement the work they are already doing, to prepare students with the new knowledge and skills that are relevant today in our growing global society. Professional development should create a culture of collaborative learning communities for educators and students.

6 Advocates of high school redesign and 21st century learning should partner with the business community and community-based organizations.

High schools should share the responsibility for providing opportunities for students to acquire 21st century skills. Businesses and community-based organizations can help high schools extend teaching and learning beyond the classroom walls and the school day.

Conclusion

We share the vision of individuals and organizations seeking to make high school more rigorous, meaningful and relevant. In today's world rigor should be redefined to include not just mastery of high-level core subjects, but also mastery of 21st century content and skills. We are prepared to work with those who are committed to recreating high schools to ensure that 21st century knowledge and skills become essential elements of their thinking, planning and implementation.

We believe that attaining 21st century knowledge and skills is an important new metric for judging students' success in high school. We need to recreate high schools to teach and assess students' capacity in 21st century knowledge and skills. And we need to hold high schools accountable to this mission. We are ready to join hands with high school redesigners to help reach this expanded goal. We each have a unique and powerful set of resources to contribute. We believe that we cannot ignore the compelling need for 21st century learning, which has profound implications for the vision of tomorrow's high school.

WWW.21STCENTURYSKILLS.ORG

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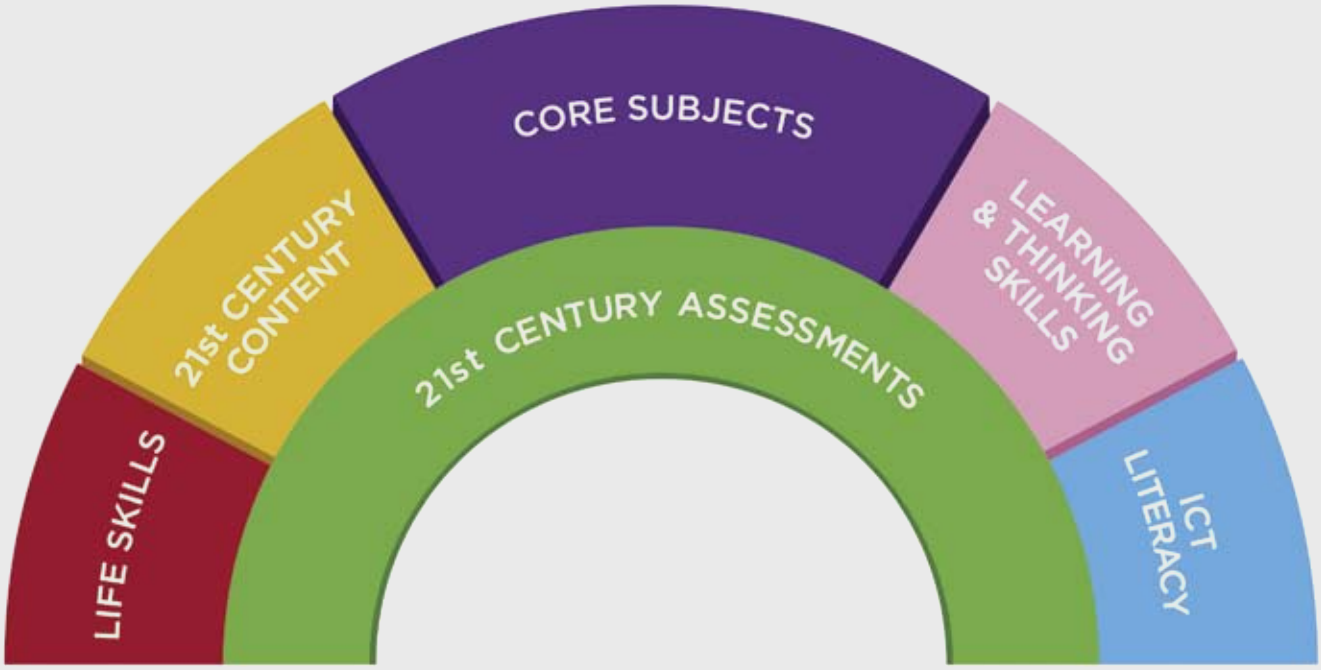

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