

Report to the
Department of Teaching and Learning
on the
Arizona Summit on 21st Century Skills

Prepared by
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The *Summit* took place on Thursday, October 25, 2007, at the University of Arizona. This document will provide an overview the Summit, along with a description of the *Partnership for 21st Century Skills* (the force behind this Summit). Following this overview, I will discuss some of the potential positive impacts, potential problems and obstacles, and the potential impact on our work in T & L and in the College of Education.

This could be the next major change from the Arizona Department of Education.

Background on the Partnership for 21st Century Skills

This section will provide summaries of the Partnership, along with brief analyses and/or critiques. Each of these summaries and analyses/critiques will occur in subsections with questions as the subtitles. Please keep in mind that I have tried to provide a balanced, but critical, perspective. However, the analyses and critiques are, of course, mine (except where cited material is used) and are subject to my own biases and views.

What is the “Partnership for 21st Century Skills?”

The *Partnership for 21st Century Skills* appears to be a “partnership” among a number of national and international corporations, businesses, and organizations. From what I can tell the *Partnership* is an operation run by Ken Kay (President), who is based in Tucson. He has a bachelor’s degree from Oberlin College (1973) and a law degree from the University of Denver (1976). Ken Kay also is chairman and co-founder of Infotech Strategies, Inc., “and leads Infotech's Education Technology practice. He has been a major voice in defining ... the importance of information technology applications in critical areas such as education, health care, electronic commerce and government services” (accessed 10/27/07 from: <http://www.itstrategies.com/bios/kay.htm>). He also is executive director of Computer Systems Policy Project. The “Partnership” is comprised of 34 business and organizational partners, as shown in table 1.

Table 1. Partners in the “Partnership for 21st Century Skills” as of October, 2007.

Partners	Interest/Focus	Type
Adobe Systems Inc.	Technology	Corporation
Apple	Technology	Corporation
American Association of School Librarians	Literacy – Technology	Association
AT&T Foundation	Technology	Corporate Foundation
Blackboard	Technology	Corporation
Cable in the Classroom	Technology	Corporation
Cengage Learning	Publishing & Technology	Corporation
Cisco Systems	Technology	Corporation
Davis Publications, Inc.	Publishing	Corporation
Dell, Inc.	Technology	Corporation
Education Networks of America	Technology	Corporation
EF Education	Education Travel	Corporation
Ford Motor Company Fund	Industry - Technology	Corporate Foundation
Giant Campus, Inc.	Education Technology - Military	Corporation
Intel Corporation	Technology	Corporation
JA (Junior Achievement) Worldwide	Education	Non-Profit
McGraw-Hill Education	Publishing – Technology	Corporation
Measured Progress	Standards-Based Assessment	Non-Profit
Microsoft	Technology	Corporation
National Education Association	Teacher Organization	Association
Oracle Education Foundation	Technology	Corporate Foundation
PolyVision	Technology	Corporation
SAP	Technology	Corporation
SAS	Technology	Corporation
Sesame Workshop	Education – Media	Non-Profit
THINKronize	Technology – Education	Corporation
Verizon	Technology	Corporation
Wireless Generation	Technology – Education	Corporation
<i>For the following partners no detailed information was available in the packet of materials.</i>		
Corporation for Public Broadcasting	Media	Non-Profit
Educational Testing Service	Assessment	Corporation
KnowledgeWorks Foundation	Technology	Corporate Foundation
Lego	Technology	Corporation
Pearson Education	Publishing	Corporation
Texas Instruments	Technology	Corporation

A summary of the types of organizations and the interests of those organizations appears in figure 1.

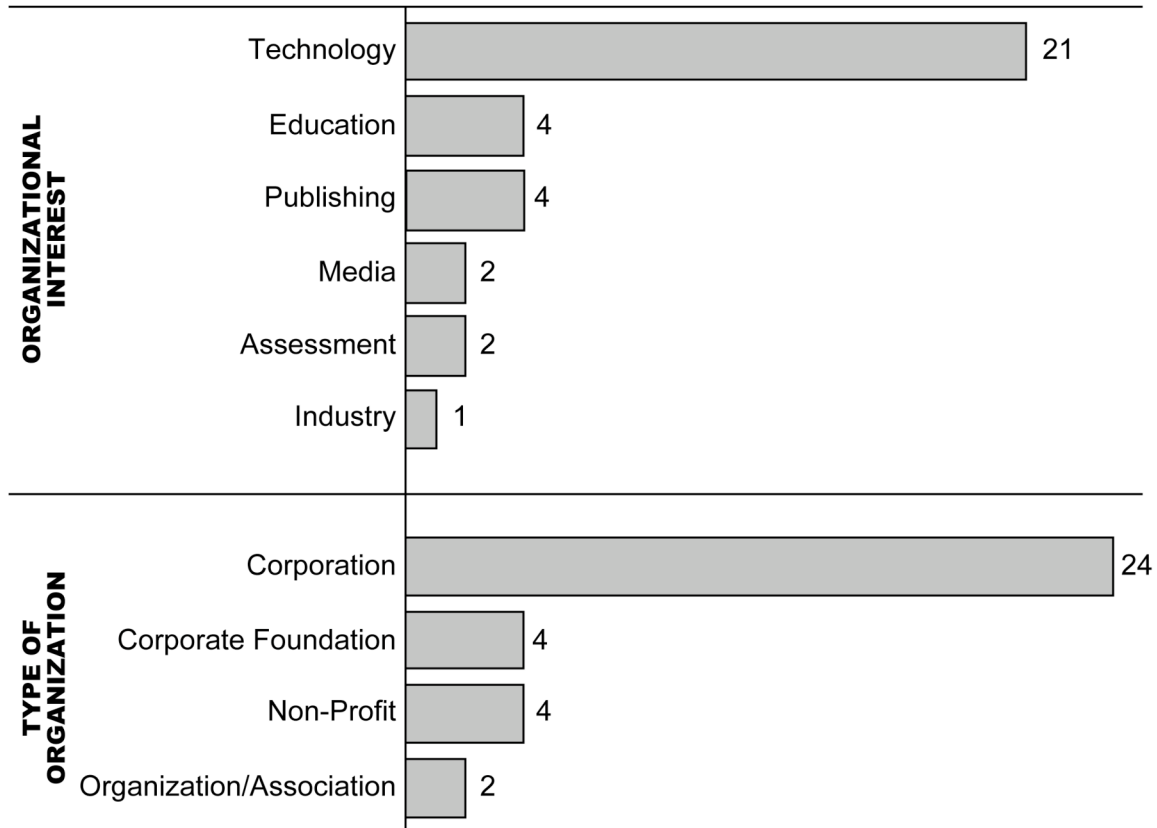


Figure 1. Partner interests and type of organization from *Partnership for 21st Century Skills*.

In considering the Partnership for 21st Century Skills, I have been having difficulty figuring out the answers to three questions:

- a. What really is the Partnership?
- b. What is the motivation of the Partnership?
- c. What is the fundamental agenda of the Partnership?

I do not know the answers to these questions. I can only think back to the Watergate myth of “follow the money.” Although what is being suggested by 21st century skills has an immediate resonance with much of what is being discussed in educational circles, there is a lingering sense that there are problems and disconnects, which are not being discussed. However, I do not want to suggest that we do not join in this major reform effort being proposed by the Partnership for 21st Century Skills, but I do urge that we move forward carefully.

What are the 21st century skills and related ideas being promoted by the Partnership?

The Partnership has developed the following list of core subjects, themes, and skills comprise the educational focus of this effort.

Core Subjects

- English, reading, or language arts
- World languages
- Arts
- Mathematics
- Economics
- Science
- Geography
- History
- Government and civics

21st Century Themes (Interdisciplinary)

- Global Awareness
- Financial, Economic, Business and Entrepreneurial Literacy
- Civic Literacy
- Health Literacy

Learning and Innovation Skills

- Creativity and Innovation
- Critical Thinking and Problem Solving
- Communication and Collaboration

Information, Media, and Technology Skills

- Information Literacy
- Media Literacy
- ICT (Information, Communications, and Technology) Literacy

Life and Career Skills

- Flexibility and Adaptability
- Initiative and Self-Direction
- Social and Cross-Cultural Skills
- Productivity and Accountability
- Leadership and Responsibility

These core subjects, themes, and skills are the basis for:

- ***Standards and assessment***
- ***Curriculum and instruction***
- ***Teacher preparation***
- ***Professional development***
- ***Learning environments***
- ***Youth development.***

As discussed throughout the presentation of the Partnership, Ken Kay and others tried to show how teaching for 21st Century skills will meet the No Child Left Behind Act standards. However, a number of the people in the audience questioned whether this was possible. In addition, the following segment from a

National School Board Association article also suggests a problem between the Partnership for 21st Century Skills and the NCLB:

How does No Child Left Behind fit into this new conception of creative thinking and assessment? Critics, such as Princeton economist Alan S. Blinder, say it doesn't.

"I would emphasize—and have emphasized in congressional testimony and many other places—that No Child Left Behind is pushing the United States in exactly the wrong direction—toward rote memorization," Blinder says. "Now how in the world are American students going to out memorize a memory chip? That's a losers' game. We need to teach students how to think, not how to memorize."

Others, like Partnership President Ken Kay, see no contradiction between NCLB and the kind of new learning and assessment his group espouses. He says NCLB has helped to identify low-performing schools even if its content-heavy assessments must evolve into something broader. (Cook & Hardy, 2007)

In general, what we will need is a different view of content. A view that specific content standards may not be relevant, but that students will need to learn some (or any) content in depth. Students also should see how knowledge "fits" to specific tasks at hand, how knowledge is created, and how knowledge is interconnected across disciplines. In fact, we need to shift our view of students as knowledge consumers to students as knowledge producers, as suggested by Hermine Marshall (1992). The danger is that nothing will change if we don't address these conflicting assumptions. We need to focus on education that promotes student production of knowledge, including ways to authentically assess students and teachers. In addition, this notion of "producing knowledge" needs to enter the political discourse so that it becomes legitimized. As a result, standards, curriculum, and assessment need to change so that we move away from specified content to learning "any" relevant content in depth and in its complexity.

What is left out of the lists of themes and skills?

Inquiry – Inquiry is a major focus of science and social studies. It also has its own set of specific thinking and procedural skills. In addition, curiosity and questioning are central to inquiry, which do not play such a major role in the other "21st century skills." For teachers, inquiry involves a fundamentally important set of skills required for becoming a reflective practitioner. In addition, such inquiry skills are important for participation in a democracy and for dealing with the multitude of problems facing our citizens.

Knowledge Production – Producing knowledge, rather than consuming knowledge, has been a focus of new perspectives of social constructivist curriculum and learning. In fact, the dichotomy between consuming and producing knowledge is a major part of the conflicting assumptions underlying schooling and school reform efforts. Testing and assessment focuses on the assumption of consuming knowledge, while many national subject matter standards and other reform efforts focus on the assumption of producing knowledge.

Analytical Thinking – Analytical thinking is another skills set that is important for citizens in dealing with major environmental, economic, social, political, and medical issues. In addition, from the perspective of the work force, analytical thinking is important throughout a wide range of occupations and professions from auto repair and other trades to engineers, scientists, physicians, and others.

Complex Thinking and Learning – As knowledge in every discipline escalates exponentially and as the issues facing people become increasingly more complex, we need to change the way we view learning to include complex understandings. Complex understandings are those that are in-depth, are heavily interconnected within and across subject matter disciplines, involve specific and generalized

explanatory models and principles, and contain the results of critical and creative thinking (Bloom, 2006, 2007).

Leadership Skills – The skill sets required of leadership are certainly important for assuming leadership in communities and in hierarchical organizations. However, leadership skills among employees also may be seen as unnecessary or as threatening from those in power.

Integrity – Integrity is not so much of a skill, but an attribute worthy of being addressed throughout schooling.

Caring and Passion – Caring about oneself, others, and ones work, along with passion for the kind of work one does are attributes that need to be fostered throughout schooling.

Environmental Literacy – This theme is central to our social, political, and economic future.

Social Justice – This theme is critically important to life in a democracy, as well as in working in a global economy.

Education for Democracy – This theme goes beyond the core course in government and civics to develop the skills of participating in a democracy.

- There also is a general lack of consideration for the recent efforts to promote the notion of establishing and working in *communities* (see Lave, Wenger, Rogoff, Bloom, et al.).
- In addition, the items in the list of 21st century *skills need to be clearly defined*, since many of these skills tend to be defined differently by each user of the term or tend not be specifically described and defined at all. For instance, critical thinking tends to be used widely within educational settings, yet the specific skills and characteristics of such thinking are rarely described. Assessing skills that are not described in detail is impossible.

What is the rationale for 21st century skills?

Ken Kay (2007) presented the rationale for 21st century skills as including:

1. Our students will be competing in the new global economy.
2. The U.S. is falling behind.
3. The nature of work is changing.
 - How many of your Parents & Grandparents had only one or two jobs in their lifetimes?
 - How many jobs will a young person have today between age 18-38?

	20th Century	21st Century
Number of Jobs:	1 - 2 Jobs	10 - 15 Jobs
Job Requirement:	Mastery of One Field	Critical Thinking Across Disciplines
Teaching Model:	Subject Matter Mastery	Integration of 21 st Century Skills into Subject Matter Mastery
Assessment Model:	Subject Matter Mastery	Integration of 21 st Century Skills into Subject Matter Mastery

4. Requirements of the workforce are changing.

Workforce Survey:

“Are They Really Ready to Work?”

• What skills are most important for job success when hiring a High School graduate?

Work Ethic	80%
Collaboration	75%
Good Communication	70%
Social Responsibility	63%
Critical Thinking & Problem Solving	58%

• Of the High School Students that you have recently hired, what were their deficiencies?

Written Communication	81%
Leadership	73%
Work Ethic	70%
Critical Thinking & Problem Solving	70%
Self-Direction	58%

• What skills and content areas will be growing in importance in the next five years?

Critical Thinking	78%
I.T.	77%
Health & Wellness	76%
Collaboration	74%
Innovation	74%
Personal Financial Responsibility	72%

5. We need our students to become effective 21st Century citizens.

What is the problem with justifying this effort for 21st century skills on developing our global competitiveness?

Although developing these 21st century skills is an admirable goal, I’m not sure the justification for developing our global competitiveness is entirely true. Although such skills may add to competitiveness, if such skills are actually acquired and used, the real “bottom line” for competitiveness may not be possible. When jobs (outsourced) and manufacturing can be obtained for extremely low costs, the major way we can be competitive involves doing away with labor unions, dropping wages, decriminalizing the hiring of illegal immigrants, capping corporate profits, and/or subsidizing corporations. I do not think we can do any of these. However, that does not mean that we should not pursue a very different approach to schooling, which very well may be in line with the “21st century skills.”

What other underlying assumptions and problems do we need to address in order to achieve some sort of major change in the way we approach schooling, such as through the Partnership for 21st Century Skills?

1. **The notions of *meaningfulness* and *relevance* are not addressed in the Partnership’s materials.** We cannot lose sight of these important aspects that characterize learning. Lack of meaning and relevance will not impact student learning positively.

2. ***Assessment, evaluation, and high-stakes tests* can present a huge obstacle to the success of any kind of reform effort.**

If some sort of high-stakes assessment is connected to this effort, neither teachers nor students will be willing to take a risk to conduct their business any differently. Teaching-to-the-test and rote memorization will be the two modes of operation.

3. **The Partnership is pushing for ways to “*measure*” teaching and student learning.**

Is measurement advisable or even possible? In this country, we seem to be stuck on the idea that we can measure or quantify everything. Yet, how do we quantify or measure creative thinking, critical thinking, problem solving, leadership, responsibility, and so forth? Which of the “partners” have a stake in “measuring student achievement?” We need to focus on new (and inexpensive) ways to assess students and teachers in ways that are authentic.

At one point, Ken Kay offered an example of a company’s assessment tool for critical thinking. He described a sample question about a city’s mayor problem with crime. Students had to read several documents, then provide a rationale for a particular action. My point was that this may be measuring reading ability or motivation, rather than critical thinking. Ken Kay dismissed this concern. So, this brings up the question of whose agenda is being pushed forward?

Assessment needs to focus on actually assessing what is intended to be assessed. We cannot confuse the issue. Why can’t critical thinking be assessed during authentic tasks and during the creation of relevant and meaningful products in the classroom?

4. **A school district partner (Catalina Foothills School District near Tucson) in describing their efforts discuss how important a number of theoretical constructs were to their work, including “Bloom’s Taxonomy.” It is important that we focus on currently cohesive and compatible theoretical frameworks, if we are to have any hope for success.**

Bloom’s Taxonomy is based on behaviorist theories. Many new constructs are much more compatible with efforts to reform schooling to meet the needs of the 21st century. We can’t operate on defunct theories of the 19th and 20th centuries, if we are to address the changing needs of the 21st century. We need to develop a cohesive and compatible set of frameworks for education in the 21st century.

5. **Imposing yet another set of strategies on teachers will not work.**

If we try to impose another approach on teachers without their “buy-in,” any efforts to reform will be unsuccessful. Changing the way we teach will require not only a great deal of teacher involvement, but also a great deal of on-going professional development and support. We also need to move away from de-professionalizing teachers in any new reform efforts and move to up the ante on professionalizing teachers.

6. **Student *self-assessment* was mentioned as a key component. However, the impact of self-assessment will not work if summative assessments are not implemented with care.**

Self-assessment promotes many of the skills described in the Partnership for 21st Century Skills documents. However, if students see that their own self-assessment are meaningless and carry no

weight, they will not self-assess at all or will just see such self-assessment as a meaningless game. Summative assessments must include student self-assessment, as well as other authentic assessments rather than the current high-stakes tests.

7. The implementation of some form of 21st century skills can be undermined by actions of the state, school districts, schools, principals, and/or teachers.

Planning for and implementing a reformed approach to schooling must be done with close attention to a theoretical and practical cohesiveness. If any one part of the implementation contradicts or undermines the overall intent, we will run the risk of failure of the entire approach. Students see through artificiality and contradictions. Artificiality and contradictory actions may lead to lack of involvement of students. In addition, students must feel a sense of ownership over classrooms and over the knowledge being produced. Without real student engagement, any curricular innovation will be difficult to pull off.

In addition, if teachers do not “buy-into” and feel a sense of ownership over the development and implementation of new curriculums, then any innovation will not succeed.

8. Tom Horne’s presentation focused on how the Arizona standards are already aligned to the focus of the Partnership for 21st Century Skills. His presentation focused on the verbs (actions) described in the standards.

However, the Arizona standards still focus on specific content, which is not emphasized in the Partnership’s approach. We will need to move beyond specifying what content is to be learned to describing the nature of content learning without specifying list of content knowledge.

Considerations

1. This initiative has the potential to revolutionize schooling in Arizona.

- a. Corporate support.
- b. Potential for funding from partners and other sources.
- c. Major emphases are consistent with current research and theory.
- d. Has the potential to provide a framework for more relevant, meaningful, and complex learning.

2. We must spend time identifying potential problems, including conflicting assumptions, and formulating strategies to address these problems. This must be done early in the process.

3. The contentious issue of assessment and accountability must receive extensive work prior to any actions to implement this approach. Any high-stakes testing and other forms of high-stakes assessment of children and teachers can render this entire initiative useless. High-stakes assessments always promote a tendency to teach-to-the-test, while not taking the risk to teach for greater learning and understanding. Arguments that corporations hold their employees accountable is not a valid argument (Nichols & Berliner, 2007) for justifying accountability standards for teachers and schools. We need to develop alternative approaches to assessment that are more authentic and that do not undermine the initiatives of this effort. We also need to be sure that what we want to assess is actually being assessed by the approaches we take.

4. We need to place the student squarely in the middle of this initiative. How are students to be engaged? How much input should they have over curricular choice? How are students to be involved within a framework of classroom as communities of (learners, knowledge producers, inquirers, problem solvers, etc.)?

Others?

Links

Arizona Summit on 21st Century Skills – <http://www.ed.arizona.edu/summit/>

InfoTech Strategies, Inc. – <http://www.itstrategies.com/>

Partnership for 21st Century Skills – <http://www.21stcenturyskills.org>

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Other Information

Information on States Participating in the Partnership for 21st Century Skills

State	Population (as of 8/2005)	Pop. Rank	Pop. per 2000 m ²	Public School Enrollment (as of Fall, 2003)	# of Teachers (2003-2004)	Students / Teacher	Achievement Rank (2007 – ranks from 1 -26 with ties)	Mean Teacher Salary (2003- 2004)
Maine	1,321,505	40	41.3	202,210 (41 st)	15,710	12.87	6	38,518 (35 th)
Massachusetts	6,398,743	13	809.8	980,459 (15 th)	65,196	15.04	1	53,181 (8 th)
North Carolina	8,683,242	11	165.2	1,377,014 (11 th)	87,947	15.66	14	43,211 (23 rd)
South Dakota	775,933	46	9.9	124,469 (46 th)	9,031	13.78	9	32,416 (51 st)
West Virginia	1,816,856	37	75.1	280,561 (38 th)	19,869	14.12	17	38,481 (41 st)
Wisconsin	5,536,201	20	98.8	880,031 (19 th)	60,033	14.66	9	42,775 (24 th)
Arizona	5,939,292	18	45.2	964,003 (16 th)	45,532	21.17	22	40,894 (28 th)

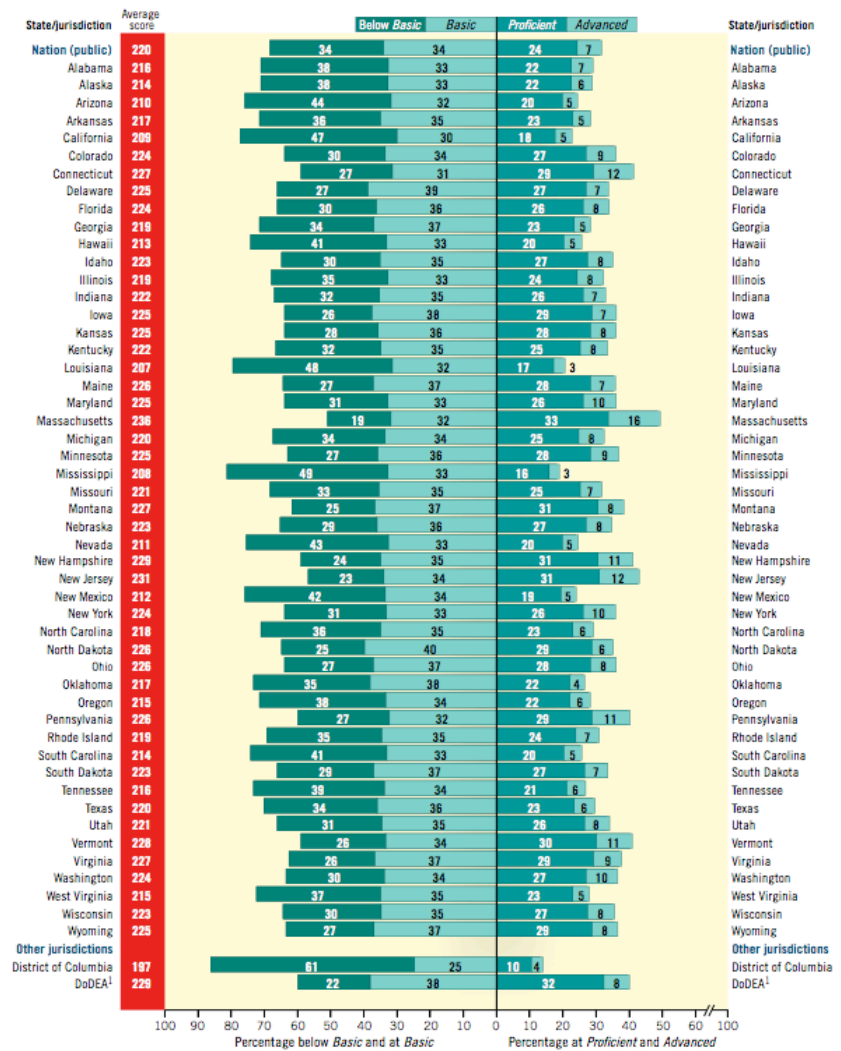
NAEP (2005)

State	Math (Grade 4)		Math (Grade 8)		Reading (Grade 4)		Reading (Grade 8)	
United States Average	237		278		217		260	
Arizona	-7	230	-4	274	-10	207	-5	255
Maine	241	+4	281	+3	225	+8	270	+10
Massachusetts	247	+10	292	+14	231	+14	274	+14
North Carolina	241	+4	282	+4	217		-2	258
South Dakota	242	+5	287	+9	222	+5	269	+9
West Virginia	-6	231	-9	269	-2	215	-5	255
Wisconsin	241	+4	285	+7	221	+4	266	+6

NAEP Achievement Scores by State:

States	Scores	Rank
Massachusetts	236	1
New Jersey	231	2
New Hampshire	229	3
Vermont	228	4
Connecticut	227	5
Montana	227	
Virginia	227	
Maine	226	6
North Dakota	226	
Ohio	226	
Pennsylvania	226	
Delaware	225	7
Iowa	225	
Kansas	225	
Maryland	225	
Minnesota	225	
Wyoming	225	
Colorado	224	8
Florida	224	
New York	224	
Washington	224	
Idaho	223	9
Nebraska	223	
South Dakota	223	
Wisconsin	223	
Indiana	222	10
Kentucky	222	
Missouri	221	11
Utah	221	
Michigan	220	12
Texas	220	
Georgia	219	13
Illinois	219	
Rhode Island	219	
North Carolina	218	14
Arkansas	217	15
Oklahoma	217	
Alabama	216	16
Tennessee	216	
Oregon	215	17
West Virginia	215	
Alaska	214	18
South Carolina	214	
Hawaii	213	19
New Mexico	212	20
Nevada	211	21
Arizona	210	22
California	209	23
Mississippi	208	24
Louisiana	207	25
District of	197	26

Figure 10. Average scores and achievement-level results in NAEP reading for fourth-grade public school students, by state: 2007



¹ Department of Defense Education Activity (overseas and domestic schools).
 NOTE: The shaded bars are graphed using unrounded numbers. Detail may not sum to totals because of rounding.
 SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2007 Reading Assessment.

What Is 'Ready'?

* 2007 MEDIA GUIDE ONLINE NOW

<http://secure.nsba.org/site/print.asp?TRACKID=&VID=2&ACTION=PRINT&CID=91&DID=5637>



By Glenn Cook and Lawrence Hardy

What is Ready?

And what are we getting students ready for?

Every few months, it seems, a new group, committee, organization, or industry weighs in on the status of public education, saying that today's graduates are not prepared to succeed in college or the real world of business and commerce. And, more often than not, they point to public schools as the source, the reason students are not ready for life in the 21st century.

What will this life be like for the Class of 2008, or for the children who are just entering kindergarten? In a world that is fast moving, high pressure, and intensely caffeinated, are schools doing enough?

For educators, this intense—and growing—scrutiny presents unprecedented challenges and opportunities as well. On the following pages, the editors of ASBJ present a look at what school leaders face today, and will face in the months and years ahead. We look at the skills students will need, technology's increasing role in education, and whether 13 years is truly enough to prepare students for the rest of their lives.

After interviewing some of the top thinkers and leaders in their respective fields, it remains impossible to say what "ready" truly is. But as school leaders charged with preparing the nation's 48 million public school students, it's your job to get them there.

We hope this special report proves to be a valuable resource in your work.

Glenn Cook is Editor-in-Chief of *American School Board Journal*.

The Skill Set

What do graduates need to be successful in the 21st century?

The reports, studies, and initiatives keep coming—dire assessments of the weak skills of U.S. high school graduates and the increasing competition they face in a burgeoning global economy. We have *The Urgency Gap*, *America's Perfect Storm*, *Tough Choices or Tough Times*, and most frightening of all, *Be Very Afraid*.

All right, we made up that last one. There is no report called *Be Very Afraid*. But since 1983's *A Nation at Risk* and its provocative, if rather absurd, charge that the mediocre U.S. public schools—if foisted on us by a foreign power—would constitute an act of war, we have operated at somewhere between code yellow and orange with respect to our ongoing crisis in the public schools.

But is the world truly different now, in the 21st century? And have U.S. students kept up? The flurry of reports makes a good case that it is, and they haven't. Consider:

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- “Employing demographic projections combined with current skills distributions, we estimate that by 2030 the average levels of literacy and numeracy in the working-age population will have decreased by about 5 percent ... Over this same period, nearly half the projected job growth will be concentrated in occupations associated with higher education and skill levels.” -- *America’s Perfect Storm: Three Forces Changing Our Nation’s Future*, a February report of the Educational Testing Service (ETS).
- “Thirty years ago, the United States could lay claim to having 30 percent of the world’s population of college students. Today that proportion has fallen to 14 percent and is continuing to fall.” -- *Tough Choices or Tough Times*, the 2007 report of the New Commission on the Skills of the American Workforce.

The decrease in literacy and numeracy predicted by ETS will be driven by increasing numbers of low-skilled Hispanic immigrants and their children. But the graduation rate among current students also is disturbingly low, having dropped to about 70 percent after peaking at 77 percent in 1969. Numerous groups—including the National Governors Association, which issued a report called *The Silent Epidemic*—say the dropout rate threatens the nation’s economic security.

The emergence of globalization

But what about our high school graduates? Several reports say they’re not doing well enough either. For example, an ACT report on the Class of 2006 found that just 42 percent of those taking the test had sufficient algebra preparation for college-level math, and only 62 could do college-level English. The proportion meeting ACT benchmarks in all four core subjects (English, Algebra, Biology, and Social Sciences) was just 21 percent.

Not surprisingly, many of these students fare poorly in college. According to Thomas Toch and Kevin Carey of Education Sector, only half of the 75 percent of high school graduates who go on to college earn degrees.

On the other hand, the United States continues to produce a substantial number of well-prepared high school graduates who can compete on a world-class level. And indeed, as accomplished members of the “Echo Boom” generation will tell you, the competition to get into the best colleges is fiercer than ever.

For example, a student from a competitive high school in Northern Virginia may have earned an A-minus average to go with her five Advanced Placement courses—and still have little chance of making the cut at the prestigious University of Virginia. Meanwhile, Lehigh University in Pennsylvania—a solid institution that may lack the cachet of Virginia or the Ivy League—has seen applications increase 50 percent over seven years to more than 10 times the 1,150 available spaces in the freshmen class, according to the *New York Times*.

So clearly, a large number of students are performing extremely well, but an even greater number are not. And while that might have been fine 50 years ago, when non-college-bound students could find well-paying jobs in manufacturing, it is no longer the case today.

The reason, of course, is globalization. The emergence of foreign markets accelerated the decline of U.S. manufacturing over the past half-century, and today it is challenging even college-educated Americans with competition from a growing class of highly skilled workers. “Today, Indian engineers make \$7,500 a year against \$45,000 for an American engineer with the same qualifications,” says *Tough Choices or Tough*

Times.

Former senator and labor secretary William E. Brock III, a member of the commission that wrote the report, puts it in more gut-check terms: “Everybody’s coming after us—we’ve got to keep that in mind,” he says. “They want what we got. And they’re willing to educate and train their workers to compete with us and—they think—win.”

Regaining a competitive edge

What, then, do today’s graduates need to compete? It will take more than mere parity, *Tough Choices* asserts: “If we succeed in matching the very high levels of mastery of mathematics and science of these Indian engineers—an enormous challenge for this country—why would the world’s employers pay us more than they have to pay the Indians to do their work? They would be willing to do that only if we could offer something that the Chinese and Indians, and others, cannot.”

The Partnership for 21st Century Skills, whose members include education-related firms such as Apple, Microsoft, and McGraw-Hill Education, has devised a six-point plan for “a unified, collective vision for 21st century learning.” It includes core subjects: 21st century content, such as global awareness and civic literacy; learning and thinking skills like creativity, communication, and contextual learning; ICT (information and community technology) literacy; life skills, such as leadership, ethics, and social responsibility; and assessments that can measure things like thinking skills and life skills.

How does No Child Left Behind fit into this new conception of creative thinking and assessment? Critics, such as Princeton economist Alan S. Blinder, say it doesn’t.

“I would emphasize—and have emphasized in congressional testimony and many other places—that No Child Left Behind is pushing the United States in exactly the wrong direction—toward rote memorization,” Blinder says. “Now how in the world are American students going to out memorize a memory chip? That’s a losers’ game. We need to teach students how to think, not how to memorize.”

Others, like Partnership President Ken Kay, see no contradiction between NCLB and the kind of new learning and assessment his group espouses. He says NCLB has helped to identify low-performing schools even if its content-heavy assessments must evolve into something broader.

“What would happen if we had a set of metrics that measures problem-solving, global awareness, and self-directed learning?” Kay asks. “We don’t need to view NCLB and 21st century skills as at odds with each other. It’s healthier to see them as the future of NCLB, seeing our work as the metrics to aspire to.”

What most observers agree on is that the United States is in the midst of a wrenching economic and societal shift that will change the way people work and live their lives. As the example of the Indian engineers illustrates, outsourcing will not be confined to low-level manufacturing jobs but will reach well into the educated sector as well.

Indeed, Blinder says, it will be felt throughout the wage spectrum among occupations that are “portable”—everything from computer programming to contract law. Brain surgeons will stay put, as will housekeepers and taxi drivers. “Architects could be endangered,” he writes, “but builders aren’t.”

The nation has weathered bigger changes before. Most notable was the shift of labor off the farm and into manufacturing during the 19th and early 20th centuries, Blinder says. “On a less dramatic level, something like a third of all Americans worked in factories around the year 1960 or 1967. ... Now it’s down to 10

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(percent).”

“So I do think we’re going to weather it,” he concludes. “But the question is, do we do it in a more painful, slow, agonizing way, or do we do it in a less painful, faster way? And that’s where these policy changes, such as in the education system, come in.”

[Lawrence Hardy](#) is a senior editor of *American School Board Journal*.

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