

PREPARING STUDENTS FOR THE 21ST CENTURY ECONOMY¹

Today as never before, meeting our society's challenges demands educational excellence. Reinvigorating the economy, achieving energy independence with alternative technologies and green jobs, and strengthening our health care system require a skilled populace that is ready for the critical challenges we face. There is widespread consensus, however, that our education systems are failing to adequately prepare all students with the essential 21st century knowledge and skills necessary to succeed in life, career and citizenship.

Three significant competitive realities underscore why our education systems are due for dramatic change:

1. The United States faces two student achievement gaps. For the past decade, the United States has focused nationally on closing achievement gaps between the lowest- and highest-performing students, and between the poorest and most affluent. Equally important, however, is the global achievement gap between U.S. students—including our top-performing students—and their international peers in competitor nations. U.S. students' fare poorly compared to their counterparts on international assessments, such as the Programme for International Student Assessment (PISA). These results are economically significant. Countries that do well on PISA, which measures 21st century skills such as critical thinking and problem solving, have demonstrated higher increases in GDP growth than countries that do not, according to a series of studies by Stanford University researchers (Partnership for 21st Century Skills 2008). An unintended consequence of progress in closing national achievement gaps has been a lack of attention to the global achievement gap—and to the growing competitive demand for advanced skills.

2. Fundamental changes in the economy, jobs, and businesses have reshaped workplaces and the nature of work. Over the last several decades, the industrial economy based on manufacturing has shifted to a service economy driven by information, knowledge, innovation and creativity. Today, more than 80 percent of jobs are in the service sector, which includes high-growth, high-wage and high-skilled occupations in new and emerging industries. In this new, globally interconnected economy, companies have changed how they are organized and the way they do business. Technology has supported these changes, which include flatter management structures, decentralized decision making, information sharing and the use of task teams, cross-organizational networking, just-in-time inventory and flexible work arrangements.

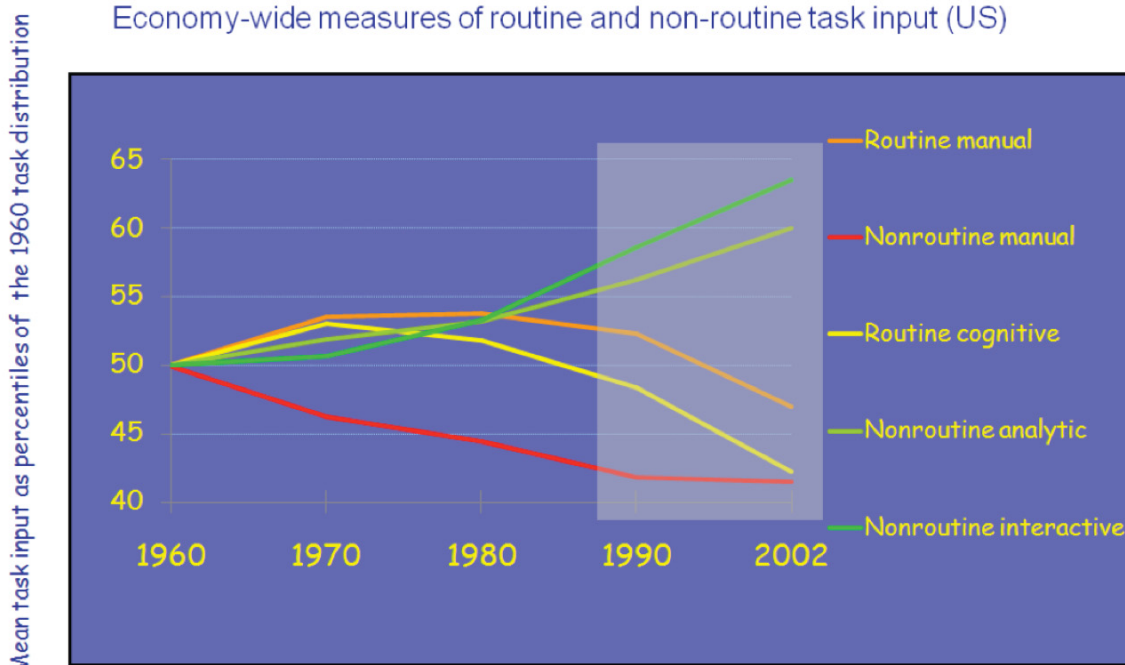
3. Fundamental changes in the economy, jobs, and businesses are driving new, different skill demands. Today more than ever, individuals must be able to perform non-routine, creative tasks if they are to succeed. While skills like self-direction, creativity, critical thinking, and innovation may not be new to the 21st century, they are newly relevant in an age where the ability to excel at non-routine work is not only rewarded, but expected as a basic requirement. Whether a high school graduate plans to enter the workforce directly, or attend a vocational school, community college, or university, it is a requirement to be able to think critically, solve problems, communicate, collaborate, find good information quickly, and use technology effectively. These are today's survival skills—not only for career success, but for personal and civic quality of life as well.

The chart that follows demonstrates how the demands for skills have changed over the years (Autor, Levy and Murnane 2003).

¹ American Association of Colleges of Teacher Education (AACTE) and the Partnership for 21st Century Skills (P21), September 2010

How the demand for skills has changed

Economy-wide measures of routine and non-routine task input (US)



(Levy and Murnane)



Given the three trends discussed above, what are the implications for today's educators?

Core Subjects and 21st Century Themes

Core subjects as defined by the Elementary and Secondary Education Act (ESEA) include English, reading or language arts, world languages, arts, mathematics, economics, science, geography, history, government and civics. The recently released National Educational Technology Plan reiterates, "Whether the domain is English language arts, mathematics, sciences, social studies, history, art, or music, 21st century competencies and expertise such as critical thinking, complex problem solving, collaboration, and multimedia communication should be woven into all content areas" (US Department of Education 2010, 4). Equally important is gaining a knowledge and understanding of the interdisciplinary nature of learning which includes the intersections between core subjects.

In addition to academic subject areas, **21st century interdisciplinary themes** are equally important in promoting understanding of academic content at much higher levels. These themes include:

- **Global Awareness**, e.g. understanding global issues, other nations and other cultures.
- **Financial, Economic, Business and Entrepreneurial Literacy**, e.g., knowing how to make economic choices, understanding the role of the economy in society.
- **Civic Literacy**, e.g. learning how to participate effectively in civic life; exercising the rights and obligations of citizenship.
- **Health Literacy**, e.g., obtaining, interpreting and understanding basic health information and services; understanding preventive physical and mental health measures.

- **Environmental Literacy**, e.g., demonstrating knowledge and understanding of the environment and the circumstances and conditions affecting it; taking individual and collective action towards addressing environmental challenges.

Learning and Innovation Skills

These are the skills most often cited when referring to 21st century skills. They are increasingly being recognized as attributes that separate students who are prepared for a more and more complex life and work environment in the 21st century, from those who are not.

- **Critical Thinking and Problem Solving**, e.g., effectively analyze and evaluate evidence, arguments, claims and beliefs; solve different kinds of non-familiar problems in both conventional and innovative ways.
- **Communication**, e.g., articulate thoughts and ideas effectively using oral and written communication skills in a variety of forms and contexts.
- **Collaboration**, e.g., demonstrate ability to work effectively and respectfully with diverse teams.
- **Creativity and Innovation**, e.g., use a wide range of idea creation techniques to create new and worthwhile ideas.

Information, Media and Technology Skills

- **Information Literacy**, e.g., access and evaluate information critically and competently; manage the flow of information from a wide variety of sources.
- **Media Literacy**, e.g., understand both how and why media messages are constructed; create media products by understanding and utilizing the most appropriate media creation tools, characteristics and conventions.
- **ICT (Information, Communications, and Technologies) Literacy**, e.g., use technology as a tool to research, organize, evaluate and communicate information.

Skills and Assessment: What Business Wants²

The top skills in order of importance are:

- Concepts and new developments in science and technology
 - Teamwork skills and the ability to collaborate with others in diverse group settings
 - The ability to apply knowledge and skills to real-world settings through internships and hands-on experience
 - The ability to effectively communicate orally and in writing
 - Critical thinking and analytical reasoning skills
 - Global issues and developments and their implications for the future
 - The ability to locate, organize, and evaluate information from multiple sources
 - The ability to be innovative
 - The ability to solve complex problems
 - The ability to work with numbers and understand statistics
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² "How Should Colleges Prepare Students to Succeed in Today's Global Economy?" American Association of Colleges and Universities and Peter D. Hart Research Associates, Inc. (2006)

Importance of Skills and Knowledge for College and Career Readiness³

How important do you think each of the following is for a student to be ready for college and a career?

	Teachers	Parents	Students	Fortune 1000 Executives
Base	n=1000	n=580	n=2002	n=301
Problem solving skills				
Absolutely essential/Very Important (NET)	98%	93%	92%	99%
Absolutely Essential	64%	60%	55%	73%
Critical thinking skills				
Absolutely essential/Very Important (NET)	97%	91%	93%	99%
Absolutely Essential	64%	61%	56%	71%
Ability to write clearly and persuasively				
Absolutely essential/Very Important (NET)	96%	90%	88%	97%
Absolutely Essential	53%	57%	50%	59%
Ability to work independently				
Absolutely essential/Very Important (NET)	95%	93%	92%	90%
Absolutely Essential	55%	59%	55%	40%
Ability to work in teams				
Absolutely essential/Very Important (NET)	86%	85%	83%	94%
Absolutely Essential	42%	42%	41%	59%
Knowledge of other nations and cultures and international issues				
Absolutely essential/Very Important (NET)	63%	63%	49%	65%
Absolutely Essential	19%	24%	15%	18%
Knowledge and ability in higher-level science such as chemistry and physics				
Absolutely essential/Very Important (NET)	50%	71%	64%	31%
Absolutely Essential	11%	29%	24%	4%
Knowledge and ability in higher-level mathematics, such as trigonometry or calculus				
Absolutely essential/Very Important (NET)	46%	69%	66%	40%
Absolutely Essential	11%	31%	27%	8%

³ The MetLife Survey of THE AMERICAN TEACHER Preparing Students for College and Career

Are They Really Ready to Work?⁴

The four participating organizations surveyed more than 400 employers from across the United States to identify the skills needed by recently hired graduates from high school, two-year colleges or technical schools, and four-year colleges to succeed in the workplace. The Key Findings are noted on the following tables:

1. Top Five Most Important Skills

	High School Graduates	Two-Year College Graduates	Four-Year College Graduates
Professionalism	80.3%	83.4%	93.8%
Teamwork	74.7%	82.7%	94.4%
Oral Communications	70.3%	82.0%	95.4%
Ethics & Social Responsibility	63.4%		
Reading Comprehension	62.5%	71.6%	

2. Primary deficiencies of high school students recently hired

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

3. Skills and content areas that will be increasing in importance in the next five years

Critical Thinking	78%
Information Technology	77%
Health and Wellness	76%
Collaboration	74%
Creativity and Innovation	74%
Personal Financial Responsibility	72%

4. Projected level of education of new employees

Reduction in high school graduate hires	27.7%
Increase in four-year graduate hires	58.8%
Increase in two-year graduate hires	49.5%

⁴ Employers' Perspectives on the Basic Knowledge and Applied Skills of New Entrants to the 21st Century U.S. Workforce, 2006, The Conference Board, Corporate Voices for Working Families, P21 and SHRM