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January In-House Meeting

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SUSAN

Young people

Young People Urgently Need New Skills to Succeed in the Global Economy



Partnership for 21st Century Skills and Citizen Schools convene thought leaders to promote new policies and practices.

Washington, D.C., November 2, 2006 – Thought leaders and representatives from business, philanthropy, K-12, after school, and youth development gathered today on Capitol Hill to discuss the skills children need to succeed in the 21st century and the venues where they can develop them—in and out of school.

The policy discussion, convened by the Partnership for 21st Century Skills and Citizen Schools, comes at a time when employers are clamoring for a better-prepared workforce. “The fact is, our young people are woefully under prepared for the demands of today’s workplace,” said Ken Kay, president of the Partnership for 21st Century Skills.

A recent national survey of company human resource officials found that:

- Almost 70% believe that high school graduates fall short in critical thinking skills
- 81% believe high school graduates are deficient in written communications
- Almost a third said they will reduce their hiring of employees with just a high school diploma
- 42% said they will hire more people with advanced degrees

The implications of this survey for low-income and minority students in particular are staggering. “When employers are finding the skills of high school graduates so very lacking, the implications for the large numbers of students who never make it to graduation in the first place are truly sobering,” said Kay.

“If we are to help our youth realize the American Dream, then we must act now to prepare them for success in the demanding and ever-changing economy of the 21st century,” said Eric Schwarz, president and CEO of Citizen Schools. “The after-school community is uniquely positioned to teach 21st century skills, but is still largely untapped and underutilized for this purpose,” Schwarz continued. “It’s time for the after-school community to become a full partner with parents and schools in teaching our nation’s children.”

Today’s policy forum included leaders from various sectors who are committed to creating a new momentum for education in our nation’s communities. Today’s panelists included Ken Kay, President and Co-Founder, Partnership for 21st Century Skills; Eric Schwarz, Co-Founder, President & CEO, Citizen Schools; Allyson Knox, Academic Program Manager, US Partners in Learning, Microsoft Corporation; John Wilson, Executive Director, National Education Association; Dr. John Box, Vice President, Product Development, JA Worldwide; and Leide Cabral, Citizen Schools alumna and Hamilton College student.

The event also marked the release of a new policy book co-edited by Partnership for 21st Century Skills and Citizen Schools, entitled *The Case for Twenty-First Century Learning*. For more information on the book, contact Colin Stokes at (617) 695-2300 ext. 229, or colinstokes@citizenschools.org.

About Citizen Schools

Citizen Schools is a leading national education initiative that uniquely mobilizes thousands of adult volunteers to help improve student achievement by teaching skill-building apprenticeships after-school. Our programs blend these real-world learning projects with rigorous academic and leadership development activities, preparing students in the middle grades for success in high school, college, the workforce, and civic life.

Launched in Boston in 1995, Citizen Schools currently serves 3,000 students and engages 2,200 volunteers in 15 cities.

For more information, visit www.citizenschools.org.

About the Partnership for 21st Century Skills

The Partnership for 21st Century Skills has emerged as the leading advocacy organization focused on infusing 21st century skills into education. The organization brings together the business community, education leaders, and policymakers to define a powerful vision for 21st century education to ensure every child’s success as citizens and

workers in the 21st century. The Partnership encourages schools, districts and states to advocate for the infusion of 21st century skills into education and provides tools and resources to help facilitate and drive change.

Member organizations include Adobe Systems Incorporated, American Association of School Librarians, Apple, BellSouth Foundation, Cable in the Classroom, Cisco Systems, Corporation for Public Broadcasting, Dell Incorporated, EF Education, ETS, Ford Motor Company Fund, Intel Foundation, JA Worldwide™, LeapFrog SchoolHouse, McGraw-Hill Education, Microsoft Corporation, National Education Association, Oracle Education Foundation, Pearson Education, Riverdeep Incorporated, SAP, SAS, Texas Instruments, Thomson Gale, and Verizon.

For more information, visit www.21stcenturyskills.org .

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PAUL

A SNAPSHOT

A Snapshot of the State of U.S. Education

By Valerie Strauss
Washington Post Staff Writer
Tuesday, November 21, 2006; A08

Did you know that despite all the criticisms leveled from coast to coast about K-12 public schools, most parents report being very satisfied with their child's school? Did you know that distance education courses are offered at more than half the country's two- and four-year postsecondary institutions?

These and other statistics are in the 2006 Condition of Education report published by the U.S. Department of Education. Each year, the department collects reams of data and statistically paints a portrait of where U.S. education stands. The following are some highlights from the latest report, available at <http://nces.ed.gov/programs/coe>.

Figures used are the latest available.

PARTICIPATION

- The percentage of children ages 3 to 5 who attended early childhood care and education programs -- including day care, Head Start, pre-kindergarten and nursery schools -- increased from 53 percent in 1991 to 60 percent in 1999. It then decreased to 57 percent in 2005.
- Between 1972 and 2004, the percentage of racial or ethnic minority students enrolled in the nation's public schools increased from 22 to 43 percent, primarily because of growth in Hispanic enrollment. In 2004, Hispanic students made up 19 percent of public school enrollment, up from 6 percent in 1972.
- The distribution of minority students in public schools differed across regions of the country. For example, minority public school enrollment in 2004 exceeded white enrollment in the West (Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington and Wyoming), 57 percent to 43 percent.
- The number of children ages 5 to 17 who spoke a language other than English at home more than doubled between 1979 and 2004, from 3.8 million to 9.9 million.

SATISFACTION

- In 2003, half of children in grades three through 12 had parents who reported that they were "very satisfied" with their child's school, teachers, the school's academic standards and the school's order and discipline.

- The percentage of students in grades one through 12 whose parents enrolled them in a "chosen" public school -- a public school other than their assigned school -- increased from 11 to 15 percent between 1993 and 2003.

- In 2003, the parents of 24 percent of students reported that they moved to their neighborhood to have their child attend a specific school.

- From 1992 through 2003, the rate of crime against students at school declined by 53 percent for theft (95 to 45 crimes per 1,000 students) and by 42 percent for all violent crime (48 to 28 crimes per 1,000 students).

- Total expenditures per student increased 23 percent in constant dollars, from \$7,847 to \$9,630 between the 1995-96 and 2002-03 school years.

- In 2002-03, total per-student expenditures were highest in low-poverty districts (\$10,768), next highest in high-poverty districts (\$10,191) and lowest in middle-poverty districts (\$8,839).

HIGHER EDUCATION

- From 1972 to 2004, the rate at which high school graduates enrolled in college in the fall immediately after high school increased from 49 to 67 percent.
- The number of bachelor's degrees awarded from academic years 1989-90 through 2003-04 increased by 33 percent; the number of associate's degrees increased by 46 percent.
- In 2004-05, about 62 percent of public and private not-for-profit, two- and four-year institutions offered distance-education courses.
- In 2003-04, the average cost of attendance (including tuition and fees, books and materials and living expenses) for full-time dependent students was:
 - \$9,800 at public, two-year institutions
 - \$15,100 at public, four-year institutions
 - \$29,500 at private, not-for-profit four-year-institutions
 - \$18,100 at private, for-profit less-than-four-year institutions
- Although net access price (an estimate of the cash outlay families need to make in a given year to cover educational expenses) increased overall at public, four-year institutions between 1999-2000 and 2003-04, only middle-income students faced statistically significant increases; there was no measurable change for low- and high-income students.
- In 2004, about 51 percent of low-socioeconomic status 12th-graders expected to earn a bachelor's degree or attend graduate school, compared with 65 percent of middle-socioeconomic status and 87 percent of high-socioeconomic seniors. (Socioeconomic status is based on income, occupation and education levels.)

STUDENT PROGRESS

- The average reading scores of fourth- and eighth-graders evaluated by the National Assessment of Educational Progress, a standardized test sometimes called the nation's report card, increased two points between 1992 and 2005.
- The percentage of fourth-graders performing at or above proficient (meaning solid academic achievement) on the national assessment increased between 1992 and 2002 from 29 to 31 percent and has remained steady since. In 2005, 31 percent of eighth-graders performed at or above proficient.
- The average NAEP math scores of fourth-graders increased 25 points from 1990 to 2005 (213 to 238), and the average score of eighth-graders increased 16 points (from 263 to 279.)
- From 1990 to 2005, the percentage of fourth-graders who performed at or above proficient in math jumped from 13 to 36 percent, and for eighth-graders, the increase was from 15 to 30 percent.
- NAEP results indicate that the achievement gaps in reading, from the first assessment in 1992 to 2005, between white and black and white and Hispanic fourth- and eighth-graders have shown little measurable change.

INTERNATIONAL ASSESSMENTS

There has been a great deal of angst in recent years about the performance of U.S. students on international assessments, with some critics bemoaning that U.S. students trail their peers in other countries. Others argue that it is unfair to compare students in one country with those in another.

The Condition of Education notes in an analysis the difficulties in international comparisons, including the uneven distribution of students' economic and social factors across countries, which can affect outcomes of cross-national comparisons. The difference in educational systems, some of which strongly direct certain students toward higher education and others away from it, is a key factor as well. Still, all countries share similar educational challenges.

Although it does not make direct comparisons between studies, the report highlights key findings from the international assessments in which the United States participates. Three measure various reading skills, and three measure math skills.

Results vary by subject, grade or age and test. U.S. students do not lead in any assessment.

Colours

8 TRENDS

Eight Super-Trends

Using expert and practitioner focus group meetings and electronic voting methods, the research team scored and ranked 200 identified trends in terms of their perceived importance to association executives. After reviewing the top trends within the eight environmental sectors, the research team identified eight “super-trends”—one in each sector. These super-trends are the broad, over-arching developments that are shaping the future of associations and their members.

Demassification

1 The mass market is breaking into smaller pieces, as differences in lifestyles, preferences, and priorities further segment the U.S. population. Customers—members and prospective members alike—in these smaller, more specialized, groups are interested in focused efforts to meet their needs, not in a one-size-fits-all package of association products and services.

Unbundling

2 Increased competition is pressuring associations to offer their products and services *à la carte* rather than as an organized package. Traditional association value propositions—such as fellowship, personal and professional growth, and mutual assistance—must be delivered via specialized, targeted vehicles (the Web, for example).

Scrimping

3 Economically, members—and their employers—are looking for a greater return on their investment in association membership. As unbundling occurs, the risk grows that the association value package will lose its overall appeal.

Wave 3.1

4 Alvin Toffler’s “Third Wave” concept—the shift from industrial societies to information-based societies—is well underway in Western countries. Information is becoming a profitless commodity. The competitive advantage lies in enriching professional development, learning, connectivity, and life itself through knowledge.

Virtualization

5 A highly mobile society has led to the disintegration of traditional neighborhoods and communities, straining personal relationships, and enhancing the appeal of Web-based “virtual” experiences as a form of fellowship. To maintain their traditional strength as community builders, associations must serve a growing appetite for virtual connections while continuing to offer personal experiences.

Cyber-Mobbing

6 The channels of political influence are broadening to include digital broadcast media that offer specialized forums for political discussion and Web-based communities that practice “swarm advocacy” and “smart mobbing.” To attract support for their positions in this crowded public arena—and to gain the attention of elected officials, regulators, and agencies—associations must develop a creative, multi-pronged, and Web-savvy approach to advocacy.

Scrutiny

7 Both special-interest legislation and litigation are on the rise, and local, state, and federal laws are introducing more aggressive oversight of association activities. As a result, associations must operate transparently, most notably in the areas of governance, advocacy, and political activity.

Counter-Americanism

8 The long-standing dominance of American styles, values, products, and business practices is diminishing with the rise of nationalistic and regionalistic politics (especially in Asia and Europe) and of disagreements with U.S. foreign policy. To operate globally, associations must develop localized models of association culture, governance, politics, and operations.

Summary of the Eight Super-Trends

ENVIRONMENTAL SECTOR	SUPER-TREND	CHALLENGE TO ASSOCIATIONS
Customer	Demassification (Break-up of the mass market)	<ul style="list-style-type: none"> • Craft increasingly focused and targeted appeals
Competitor	Unbundling (One-size-fits-all products and services no longer appeal)	<ul style="list-style-type: none"> • Determine what member needs can be met through new, imaginative value packages
Economic	Scrimping (Members want a greater return on their dues investment)	<ul style="list-style-type: none"> • Help members rediscover the personal and social payoffs of belonging
Technology	Wave 3.1 (Knowledge, not information, is the competitive advantage)	<ul style="list-style-type: none"> • Move beyond information products to offer enrichment and learning through the application of knowledge
Social	Virtualization (People want virtual as well as personal relationships)	<ul style="list-style-type: none"> • Continue to offer “the personal touch” while building and strengthening virtual communities
Political	Cyber-Mobbing (Web-based communities are organizing for advocacy)	<ul style="list-style-type: none"> • Harness the power of the Web and integrate it with more traditional advocacy methods
Legal	Scrutiny (New laws for oversight call for greater transparency)	<ul style="list-style-type: none"> • Closely track developments in legal and regulatory areas • Develop a policy framework for ensuring compliance
Geophysical	Counter-Americanism (U.S. styles, values, products, and approaches no longer dominate the world)	<ul style="list-style-type: none"> • Partner with others to develop localized models for association culture, governance, and operations • Develop diverse value packages for non-U.S. members

Ten Trends

Educating Children for a Profoundly Different Future

These trends will have a profound impact on education during the early part of the 21st century:

- **For the first time in history, the old will outnumber the young.**
(Younger → Older)
- **The country will become a nation of minorities.**
(Majority/Minority → Minority/Minority)
- **Social and Intellectual Capital will become the primary economic value in society.**
(Industrial Age → Global Knowledge/Information Age)
- **Education will shift from averages to individuals.**
(Standardization → Personalization)
- **The Millennial Generation will insist on solutions to accumulated problems and injustices.**
(Silents, Boomers, Xers → Millennials)
- **Continuous improvement and collaboration will replace quick fixes and defense of the status quo.**
(Quick Fixes or Status Quo → Continuous Improvement)
- **Technology will increase the speed of communication and the pace of advancement or decline.**
(Atoms → Bits) and (Macro → Micro → Nano)
- **Knowledge creation and breakthrough thinking will stir a new era of enlightenment.**
(Information Acquisition → Knowledge Creation)
- **Scientific discoveries and societal realities will force widespread ethical choices.**
(Pragmatic/Expedient → Ethical)
- **Competition will increase as industries and professions intensify their efforts to attract and keep talented people.**
(Unemployment → Hyperemployment)

John & Margorie

EX SUMMARY

EXECUTIVE SUMMARY

The Secretary's Commission on Achieving Necessary Skills (SCANS) was asked to examine the demands of the workplace and whether our young people are capable of meeting those demands.

Specifically, the Commission was directed to advise the Secretary on the level of skills required to enter employment. In carrying out this charge, the Commission was asked to:

- Define the skills needed for employment;
- Propose acceptable levels of proficiency;
- Suggest effective ways to assess proficiency; and
- Develop a dissemination strategy for the nation's schools, businesses, and homes.

This report results from our discussions and meetings with business owners, public employers, unions, and workers and supervisors in shops, plants, and stores. It builds on the work of six special panels we established to examine all manner of jobs from manufacturing to government employment. We also commissioned researchers to conduct lengthy interviews with workers in a wide range of jobs.

The message to us was universal: good jobs will increasingly depend on people who can put knowledge to work. What we found was disturbing: more than half our young people leave school without the knowledge or foundation required to find and hold a good job. These people will pay a very high price. They face the bleak prospects of dead-end work interrupted only by periods of unemployment.

Two conditions that arose in the last quarter of the 20th Century have changed the terms of our young people's entry into the world of work: the globalization of commerce and industry and the explosive growth of

technology on the job. These developments have barely been reflected in how we prepare young people for work or in how many of our workplaces are organized. Schools need to do a better job and so do employers. Students and workers must work smarter. Unless they do, neither our schools, our students, nor our businesses can prosper.

SCANS research verifies that what we call *workplace know-how* defines effective job performance today. This know-how has two elements: *competencies* and a *foundation*. This report identifies five competencies and a three-part foundation of skills and personal qualities that lie at the heart of job-performance. (See pages x and xi.) These eight requirements are essential preparation for all students, both those going directly to work and those planning further education. Thus, the competencies and the foundation should be taught and understood in an integrated fashion that reflects the workplace *contexts* in which they are applied.

We believe, after examining the findings of cognitive science, that the most effective way of learning skills is "in context," placing learning objectives within a real environment rather than insisting that students first learn in the abstract what they will be expected to apply.

The five SCANS competencies span the chasm between school and the workplace. Because they are needed in workplaces dedicated to excellence, they are hallmarks of today's expert worker. And they lie behind the quality of every product and service offered on today's market.

The competencies differ from a person's technical knowledge. For example, both accountants and engineers manage resources, information, systems, and technology. They require competence in these areas even though building a bridge has little to do with balancing a set of books. But in each profession, the

competencies are at least as important as the technical expertise. The members of the Commission believe these competencies are applicable from the shop floor to the executive suite. In the broadest sense, the competencies represent the attributes that today's high-performance employer seeks in tomorrow's employee.

To describe how this know-how is used on the job, our report provides a series of five scenarios that portray work requirements in the context of the real world. The scenarios show that work involves a complex interplay among the five competencies we have identified and the three elements of the foundation — the **basic skills**, higher order **thinking skills**, and diligent application of **personal qualities**.

The scenarios make clear that tomorrow's career ladders require even the basic skills — the old 3 Rs — to take on a new meaning. First, all employees will have to **read** well enough to understand and interpret diagrams, directories, correspondence, manuals, records, charts, graphs, tables, and specifications. Without the ability to read a diverse set of materials, workers cannot locate the descriptive and quantitative information needed to make decisions or to recommend courses of action. What do these reading requirements mean on the job? They might involve:

- interpreting blueprints and materials catalogues;
- dealing with letters and written policy on complaints;
- reading patients' medical records and medication instructions; and
- reading the text of technical manuals from equipment vendors.

At the same time, most jobs will call for **writing skills** to prepare correspondence, instructions, charts, graphs, and proposals, in

order to make requests, explain, illustrate, and convince. On the job this might require:

- writing memoranda to justify resources or explain plans;
- preparing instructions for operating simple machines;
- developing a narrative to explain graphs or tables; and
- drafting suggested modifications in company procedures.

Mathematics and computational skills will also be essential. Virtually all employees will be required to maintain records, estimate results, use spreadsheets, or apply statistical process controls as they negotiate, identify trends, or suggest new courses of action. Most of us will not leave our mathematics behind us in school. Instead, we will find ourselves using it on the job, for example, to:

- reconcile differences between inventory and financial records;
- estimate discounts on the spot while negotiating sales;
- use spreadsheet programs to monitor expenditures;
- employ statistical process control procedures to check quality; and
- project resource needs over the next planning period.

Finally, very few of us will work totally by ourselves. More and more, work involves listening carefully to clients and co-workers and clearly articulating one's own point of view. Today's worker has to **listen** and **speak** well enough to explain schedules and procedures, communicate with customers, work in teams, understand customer concerns, describe complex systems and procedures, probe for hidden meanings, teach others, and solve problems.

FIVE COMPETENCIES

Resources: Identifies, organizes, plans, and allocates resources

- A. *Time* — Selects goal-relevant activities, ranks them, allocates time, and prepares and follows schedules
- B. *Money* — Uses or prepares budgets, makes forecasts, keeps records, and makes adjustments to meet objectives
- C. *Material and Facilities* — Acquires, stores, allocates, and uses materials or space efficiently
- D. *Human Resources* — Assesses skills and distributes work accordingly, evaluates performance and provides feedback

Interpersonal: Works with others

- A. *Participates as a Member of a Team* — contributes to group effort
- B. *Teaches Others New Skills*
- C. *Serves Clients/Customers* — works to satisfy customers' expectations
- D. *Exercises Leadership* — communicates ideas to justify position, persuades and convinces others, responsibly challenges existing procedures and policies
- E. *Negotiates* — works toward agreements involving exchange of resources, resolves divergent interests
- F. *Works with Diversity* — works well with men and women from diverse backgrounds

Information: Acquires and uses information

- A. *Acquires and Evaluates Information*
- B. *Organizes and Maintains Information*
- C. *Interprets and Communicates Information*
- D. *Uses Computers to Process Information*

Systems: Understands complex inter-relationships

- A. *Understands Systems* — knows how social, organizational, and technological systems work and operates effectively with them
- B. *Monitors and Corrects Performance* — distinguishes trends, predicts impacts on system operations, diagnoses deviations in systems' performance and corrects malfunctions
- C. *Improves or Designs Systems* — suggests modifications to existing systems and develops new or alternative systems to improve performance

Technology: Works with a variety of technologies

- A. *Selects Technology* — chooses procedures, tools or equipment including computers and related technologies
- B. *Applies Technology to Task* — Understands overall intent and proper procedures for setup and operation of equipment
- C. *Maintains and Troubleshoots Equipment* — Prevents, identifies, or solves problems with equipment, including computers and other technologies.

A THREE-PART FOUNDATION

Basic Skills: Reads, writes, performs arithmetic and mathematical operations, listens and speaks

- A. *Reading* — locates, understands, and interprets written information in prose and in documents such as manuals, graphs, and schedules
- B. *Writing* — communicates thoughts, ideas, information, and messages in writing; and creates documents such as letters, directions, manuals, reports, graphs, and flow charts
- C. *Arithmetic/Mathematics* — performs basic computations and approaches practical problems by choosing appropriately from a variety of mathematical techniques
- D. *Listening* — receives, attends to, interprets, and responds to verbal messages and other cues
- E. *Speaking* — organizes ideas and communicates orally

Thinking Skills: Thinks creatively, makes decisions, solves problems, visualizes, knows how to learn, and reasons

- A. *Creative Thinking* — generates new ideas
- B. *Decision Making* — specifies goals and constraints, generates alternatives, considers risks, and evaluates and chooses best alternative
- C. *Problem Solving* — recognizes problems and devises and implements plan of action
- D. *Seeing Things in the Mind's Eye* — organizes, and processes symbols, pictures, graphs, objects, and other information
- E. *Knowing How to Learn* — uses efficient learning techniques to acquire and apply new knowledge and skills
- F. *Reasoning* — discovers a rule or principle underlying the relationship between two or more objects and applies it when solving a problem

Personal Qualities: Displays responsibility, self-esteem, sociability, self-management, and integrity and honesty

- A. *Responsibility* — exerts a high level of effort and perseveres towards goal attainment
- B. *Self-Esteem* — believes in own self-worth and maintains a positive view of self
- C. *Sociability* — demonstrates understanding, friendliness, adaptability, empathy, and politeness in group settings
- D. *Self-Management* — assesses self accurately, sets personal goals, monitors progress, and exhibits self-control
- E. *Integrity/Honesty* — chooses ethical courses of action

On the job, these skills may translate readily into:

- training new workers or explaining new schedules to a work team;
- describing plans to supervisors or clients;
- questioning customers to diagnose malfunctions; and

- answering questions from customers about post-sales service.

SCANS estimates that less than half of all young adults have achieved these reading and writing minimums; even fewer can handle the mathematics; and, schools today only indirectly address listening and speaking skills.

Defining the minimum levels of proficiency in the SCANS competencies is also a crucial part of the Commission's task. It requires judgments about the learning possible in yet-to-be designed schools. It also requires imagining what the workplaces of the year 2000 could and should look like.

Our work on these required levels of proficiency is not complete. We have examined less than a third of the jobs we intend to research. We also wish to hear what others think of our initial efforts. The insert at the top of page xx is illustrative of our initial estimates of work-ready levels of proficiency in the five competencies. Proficiency in each competency requires proficiency in the foundation. The contexts displayed come from more extensive scenarios contained in our report. The point we wish to make is that young people leaving school should have both a sufficient foundation and level of understanding of the competencies to exhibit performances like those illustrated.

The minimums we propose will define what makes a young person ready for work at entry levels on career ladders. They represent neither the first nor last step in a process of life-long learning. Instead, the minimums will be a second step in a progression of skills acquisition. For example, consider scheduling time, part of the SCANS **resources** competency. A young student (at the preparatory stage) might be expected to make a schedule for him or herself. Being *work-ready* would require making a schedule for others. At the extreme, a specialist might develop schedules for an airline. (See insert at bottom of page xiii.)

In September 1989 President Bush and the nation's governors agreed to six national goals in education to be achieved by the year 2000. By April 1991 a four-part strategy to attain these six goals was announced by President Bush and Secretary of Education Lamar Alexander. This report of the Secretary

of Labor's Commission on Achieving Necessary Skills speaks directly to those goals and to that strategy. It defines what our young people must know and be able to do in order to hold a decent job and earn a decent living.

Our work pertains directly to National Goals #3 and #5 which state:

Goal #3 American students will leave grades four, eight, and twelve having demonstrated competency in challenging subject matter including English, mathematics, science, history, and geography; and every school in America will ensure that all students learn to use their minds well, so they may be prepared for responsible citizenship, further learning, and *productive employment in our modern economy*. (emphasis added)

Goal #5 Every adult American will be literate and will *possess the knowledge and skills necessary to compete in a global economy* and exercise the rights and responsibilities of citizenship. (emphasis added)

Our report is intended to contribute to all four parts of the strategy put forth by President Bush in AMERICA 2000 as shown below.

Workforce know-how will be part of the new World Class Standards. However, defining competencies and a foundation is not enough. Schools must teach them. Students must learn them. And, they should be assessed as part of the America 2000 agenda. Our work on these issues will continue over the coming months. Among the concrete steps SCANS will take in the future are efforts to:

ALways

The Future...



The Future at Work—Trends and Implications

- RAND RESEARCH AREAS
- CHILDREN AND ADOLESCENTS
- CIVIL JUSTICE
- EDUCATION
- ENERGY AND ENVIRONMENT
- HEALTH AND HEALTH CARE
- INTERNATIONAL AFFAIRS
- U.S. NATIONAL SECURITY
- POPULATION AND AGING
- PUBLIC SAFETY
- SCIENCE AND TECHNOLOGY
- SUBSTANCE ABUSE
- TERRORISM AND HOMELAND SECURITY
- TRANSPORTATION AND INFRASTRUCTURE

What does the future hold for work in the 21st century? In a new study for the U.S. Department of Labor, RAND researchers Lynn Karoly and Constantijn Panis seek to answer this question. In particular, they examine how three major trends that will shape the future at work in this century—shifting demographic patterns, the pace of technological change, and the path of economic globalization—will evolve over the next 10–15 years. Then, they consider the implications of these trends for key aspects of the future workforce and workplace, including the size, composition, and skills of the workforce; the nature of work and workplace arrangements; and worker compensation. Their assessment of these underlying structural forces is based on relevant data and research and is intended to help all stakeholders—workers, employers, educators, and policymakers—make informed decisions.

Shifting Demographic Patterns

Given population trends and trends in labor force participation rates, the U.S. workforce will continue to increase in size but at a considerably slower rate than in the past. During the 1970s, the workforce grew 2.6 percent annually, declining to 1.1 percent growth in the 1990s. Between 2000 and 2010, the annual growth rate is projected to equal that of the 1990s, but it is projected to slow in the next decade to just 0.4 percent and in the following decade to only 0.3 percent.

In terms of workforce composition, the trend is for a shift toward a more balanced distribution by age, sex, and race/ethnicity. The U.S. population and workforce have been growing older as the baby-boom generation ages; put another way, the workforce has become more evenly distributed across age groups. Also, steadily increasing female labor force participation rates, combined with declining male rates, have brought the labor force closer to gender balance. Finally, the inflow of immigrants has been largely responsible for a continuing increase in the racial and ethnic diversity of

Abstract

Trends in workforce size and composition and in the pace of technological change and economic globalization will have implications for the future of work. Employees will work in more decentralized, specialized firms; slower labor growth will encourage employers to recruit groups with relatively low labor force participation; greater emphasis will be placed on retraining and lifelong learning; and future productivity growth will support higher wages and may affect the wage distribution. Given this, some policies may need to be reexamined.

the workforce, with Hispanics and Asians being the fastest-growing such groups in the workforce.

The Pace of Technological Change

The pace of technological change—whether through advances in information technology (IT), biotechnology, or such emerging fields as nanotechnology—will almost certainly accelerate in the next 10–15 years, with synergies across technologies and disciplines generating advances in research and development, production processes, and the nature of products and services.

In the IT field, for example, advances in microprocessors will support real-time speech recognition and translation, and artificial intelligence and robotics are likely to advance further. The use of more intelligent robotics in manufacturing will support the ability to quickly reconfigure machines to produce prototypes and new production runs, with implications for manufacturing logistics and inventories. Further technological advances are expected to continue to increase demand for a highly skilled workforce, support higher productivity growth, and change the organization of business and the nature of employment relationships.

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The Path of Economic Globalization

The future reach of economic globalization will be more extensive than before, affecting industries and workforce segments relatively insulated from trade-related competition in the past. For example, trade in services has grown from 18 to 30 percent of the total over the last 20 years, and some higher-skilled, white-collar jobs in the services sector, such as IT and business processing services, are now increasingly outsourced overseas. The new era of globalization—marked by growing trade in intermediate goods and services, expanding capital flows, more rapid transfer of knowledge and technologies, and mobile populations—partly results from inexpensive, rapid communications and information transmission enabled by the IT revolution.

Globalization will continue its record to date of contributing economic benefits in the aggregate. Although market share and jobs will be lost in some economic sectors, with short-term and longer-term consequences for affected workers, the job losses will be counterbalanced by employment gains in other sectors.

Implications of Trends

These three trends overlap, as do their implications. Here, we highlight four of the more important ones:

- Employees will work in more decentralized, specialized firms, and employer-employee relationships will become less standardized and more individualized.
- Slower labor force growth will encourage employers to adopt approaches to facilitate greater labor force participation among women, the elderly, and people with disabilities.
- Greater emphasis will be placed on retraining and lifelong learning as the U.S. workforce tries to stay competitive in the global marketplace and respond to technological changes.
- Future productivity growth will support rising wages and may affect the wage distribution; the tie between employment and access to fringe benefits will be weakened.

Firms are moving from vertically integrated organizations to more specialized ones that outsource noncore functions and to more decentralized forms of internal organization. We can expect a shift away from more permanent, lifetime jobs toward less permanent, even nonstandard employment relationships (e.g., self-employment) and work arrangements (e.g., distance work). These arrangements may be particularly attractive to workers trying to balance work and family obligations or to the disabled and older people who would benefit from alternative arrangements.

In a tight labor market, employers can try to recruit groups with relatively low labor force participation. Changes in incentives associated with pension plans and reforms to Social Security may motivate older workers to retire later. Providing child care may make it easier

to recruit women with children. Also, changes in technology and in the workplace described above may make it possible to recruit more people with disabilities into the workplace. Immigration policy offers another lever, in particular to target highly skilled aliens, thus raising the overall skill levels of the U.S. workforce.

Rapid technological change and increased international competition spotlight the need for the workforce to be able to adapt to changing technologies and shifting product demand. Shifts in the nature of business organizations and the growing importance of knowledge-based work also favor strong nonroutine, cognitive skills, such as abstract reasoning, problem-solving, communication, and collaboration. In this context, education and training becomes a continuous process throughout the life course, involving training and retraining that continue well past initial entry into the labor market. Technology-mediated learning is a promising tool for life-long learning, both on the job and through traditional public and private education and training institutions.

Future trends in technology, globalization, and demographics will support higher wages and are likely to affect the distribution of wages, just as they have in the past several decades. In the absence of a strong increase in the supply of skilled workers in response to the higher returns to education, wage dispersion—particularly as measured by the gap between more- and less-educated workers—will likely remain at current levels or even continue to widen.

Meanwhile, greater turnover within traditional employment relationships and shifts to nonstandard employment relationships highlight the importance of fringe benefits being portable across jobs or even independent of jobs. Employers that offer benefits may move toward more personalized structures. Younger and older workers, for example, might be allowed to select those benefits that fit their circumstances, with cash wages adjusted to retain overall compensation levels. Information technologies and outsourcing may support this trend by reducing the costs of managing a more complex system of employee benefits.

From a policy perspective, many of the institutional features of the U.S. labor market—e.g., the laws and regulations that govern employment, hours, wages, fringe benefits, occupational health and safety—evolved in an earlier era. Given the above trends and implications, some policies may need to be reexamined. For example, are there distortions or unintended consequences with current policies that preclude desirable market adjustments? Are policies put in place to address market failures in the past less relevant, given circumstances today and their likely future evolution? Are there new market failures policy can address? Are there distributional consequences that could argue for government intervention? The book provides a context to address these and other important questions to prepare the U.S. labor market for the 21st century. ■

This research brief describes work done for RAND Labor and Population documented in Lynn A. Karoly and Constantijn W.A. Panis, *The 21st Century at Work: Forces Shaping the Future Workforce and Workplace in the United States*, MG-164-DOL, 2004, 301 pp., \$30, ISBN: 08330-3492-8., available from RAND Distribution Services (phone: 310-451-7002; toll free: 877-584-8642; or email: order@rand.org). View this document at <http://www.rand.org/publications/RB/RB5070>. The RAND Corporation is a nonprofit research organization providing objective analysis and effective solutions that address the challenges facing the public and private sectors around the world. RAND's publications do not necessarily reflect the opinions of its research clients and sponsors. RAND® is a registered trademark.

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Preparing for an Uncertain Future

by Laura Lefkowitz & Kirsten Miller

In 1898, Charles H. Duell, Commissioner of the U.S. Patents Office, said, "Everything that can be invented, has been invented." In 1943, Thomas J. Watson, Chairman of IBM, predicted that there was a world market for "about five computers." And, in 1977, Ken Olsen, President of Digital Equipment Corp., authoritatively stated that "there is no reason for any individual to have a computer in their home." These men, all experts in their respective fields, based their statements on their past experiences and the realities of the time. Had they stopped to consider the myriad of factors that could be expected to impact the pace and scope of change in the future, they would likely have made very different predictions.

But what are the global, demographic, economic, technological, political, and generational trends that will shape the world in which we will live and work a decade, or two, from now? What are the chances that all or some combination of these trends will converge in ways that create a future fundamentally different from our past experiences and current realities?

*"We are called to be architects of the future,
not its victims."*

— R. Buckminster Fuller

What might be the effect of these trends on America's education system? And how should leaders anticipate and prepare their organizations for a future shaped by the potential convergence of these trends?

As policymakers, district and school administrators, and other educators look to the future of education in their states and across the nation, these are just a few of the questions they need to consider. But simply considering these questions is not enough. Policymakers and educators also must develop action plans that prepare them to respond to likely future scenarios.

A frank evaluation of our current system of schooling readily reveals its weaknesses when faced with the goal of bringing *all* students to proficiency on challenging standards. As states struggle with implementing the No Child Left Behind Act (NCLB), questions about the very nature of schooling have emerged. Is the length of the school day adequate for all children? Should public schooling begin at age three or younger for some or all children? Are the systems for preparing and developing our teachers

and principals sufficient to provide the numbers of high-quality school professionals we will need? And what is the most essential set of knowledge and skills students need to achieve in order to thrive in the future?

We will not be able to know with certainty the answers to any of the preceding questions, but by asking, “What if?” in a disciplined way, we might better imagine the possibilities of tomorrow — and take action *today* that will position us for success in the future.

This policy brief provides an overview of McREL’s own application of the scenario planning process, and offers information on ways in which policymakers and educators might begin thinking about the future of education in their states as well as nationally. This brief is based on a more comprehensive report on McREL’s scenario-planning work, *The Future of Schooling: Educating America in 2014*, which is available online at www.mcrel.org.

McREL’s Journey Toward the Future

In 2003, McREL rarely considered the implications of an aging American workforce and the associated stresses it could place on public and private resources for education research and development. The same was true of our understanding of the impact of rapid advancements in information and digital technology, and of the inherent challenges to the goal of leaving no child behind in our increasingly competitive global economy. Yet, one thing was clear — the world is changing rapidly, and the ten years from 2004 to 2014 just might be unlike any experienced in recent history.

So, we began collecting data on workforce and student demographics, costs of entitlement programs and health care for seniors, emerging technologies and their likely impact on schooling and learning, generational characteristics, economics, globalization, energy consumption, school choice, and the implementation of the No Child Left Behind Act. The more data we collected, analyzed, and synthesized, the more apparent it became that we must begin to plan *now* for an uncertain future.

Thus, we embarked on a deliberate journey into the future. McREL’s senior management and program staff (nearly one-third of our more than 100-member organization) engaged in a rigorous process of learning about and archiving key insights about the implications of various trends for government and politics, work and the workplace, home and lifestyles, and schooling and learning. Our board of directors, comprised of state and national education, policy, and business leaders, joined our deliberations and critiqued the staff’s work. We developed expertise in the process of writing and using scenarios and, ultimately envisioned not one possible future, but a total of 16 possible futures, written as scenarios for education in the year 2014. Each of these will provide us guidance as we chart our organizational course in the years ahead.

What are Scenarios?

Scenarios are stories that take into account key drivers of change, or trends that are likely to influence the future, and how those drivers might interact with one another to create alternative futures. These stories are not predictions of the future but, rather, *plausible* future realities that can guide organizational strategic decision-making in the present.

For many years now, business leaders the world over have benefited from engaging in the process of writing scenarios. They use them to develop responses to potential future conditions in order to gain a competitive edge in an uncertain market. Education leaders, we believe, can benefit from this process as well as they seek to maintain their organizations' relevance and sustained contribution to helping all students succeed in a changing world.

Exploration

Writing scenarios about the future of education requires “re-perceiving” the future and imagining *all* aspects of the way the world might be, not just those factors that relate specifically to education. Indeed, the political environment, the economy, globalization, technological innovations, and social values will all impact and contribute to the way the future of education unfolds.

Thus, at McREL we began our exploration of the future by inviting six nationally-known experts in a wide array of disciplines to share with us their knowledge about the key drivers of change and their anticipated impacts on major social institutions. The data gathered from these experts was documented and is continually incorporated into our discussions about what the world might be like 10, 20, or 50 years from now.

“To operate in an uncertain world, people needed to be able to re-perceive, to question their assumptions about the way the world works, so that they could see the world more clearly. The purpose of scenarios is to help you change your view of reality — to match it up more closely with reality as it is, and reality as it is going to be.”

— Peter Schwartz, *The Art of the Long View*

Glen Hiemstra, founder of Futurist.com, launched our exploration into the future by talking about the potential for radical anti-aging techniques, genetic therapies, nano-technology, and changes in the nature of work and retirement. Chris Dede, Chair, Learning and Teaching at the Harvard Graduate School of Education, exposed us to the concept of “ubiquitous learning” made possible by a variety of breakthrough technologies. Noted educational demographer, Harold (Bud) Hodgkinson discussed

with us his view of the impact of major demographic changes (aging, racial diversity, immigration) on our future lifestyles, workplaces, schools, and other public institutions.

Neil Howe, historian, economist, demographer, and co-founder of LifeCourse Associates, discussed the characteristics and historical impact of different generations — and the different leadership styles we might expect as baby boomers retire, leaving high level positions to be filled by members of Generation X and the Millennials. Jack Jennings, president and CEO of the Center on Education Policy in Washington, D.C. and a former subcommittee staff director and general counsel for the U.S. House of Representatives' Committee on Education and Labor, provided a glimpse into the future of education policy and the No Child Left Behind Act in particular. Finally, we learned about the economic impacts of consumer behavior and the “Great Winter” forecasted by the Harry S. Dent Foundation from its president, Rodney Johnson.

These speakers provided the inspiration for us to begin a disciplined approach to discovering trends of the future in many different areas. Now, we routinely identify articles in the daily press and in professional journals and categorize them based on what they tell us about how different “drivers of change,” are likely to impact our homes, work, government or schools. This set of data provided ideas to enrich and enhance the plausibility of the scenarios we wrote. As we continue to build our knowledge base, we draw inferences from this information and incorporate those insights into our ongoing strategic planning process. In addition, we are constantly reminded of the many ways in which forces that are beyond our control, or are easily overlooked, may have an impact on the future of education.

Critical Uncertainties and Predetermined Elements

Although uncertainty about the future abounds — from the price of oil to the rise of China as an industrial power — only some uncertainties are *critical* to consider when developing scenarios focused on a particular issue. For example, a manufacturing company, considering whether or not to invest capital in Asian markets, is likely to be quite concerned about China's position in the international economy; a state government faced with rising costs of home heating subsidies for low-income renters may be more concerned about the price of oil.

So, although local and state education agencies may be equally concerned about the future of education, the factors that most influence the futures of each agency may be very different. That is, a state agency may be concerned with the future role of the federal government in education while a school district may be more concerned about the changing nature of its student population and how best to serve a diverse enrollment. Good scenarios depend upon the scenario builder's ability to sort through the myriad driving forces of change to select the *most critical* forces for the question at hand.

In addition, there are some forces, events, or conditions that we can “predict” will exist with a fair degree of certainty. We define those conditions as “predetermined” and, for the purposes of writing scenarios, assume that they are highly likely to occur. Inclusion of these predetermined elements helps to ground the scenarios in reality and increase their plausibility. For example, the demographic data we collected led us to conclude that lengthening lifespans, aging baby boomers, and increasing ethnic diversity are predetermined elements. Because we can reasonably expect these elements to be present in the future, they should appear in each of our scenarios. On the other hand, the impact of aging boomers on the economy, and attitudes toward rising immigrant populations in our schools, for example, are uncertain and may play out in varying ways across different scenarios.

Developing the Framework

Identifying critical uncertainties is the “hard work” of the scenario building process. Ultimately, to create a scenario framework, scenario builders must narrow their selection to just two critical uncertainties. These form the “x” and “y” axes of a Cartesian plane, with the resulting four quadrants of the graph representing four possible scenarios for the future (see Fig. 1).

In addition to identifying the two most critical uncertainties, scenario-builders must define the end points of each on the axis. For example, an important factor influencing the future of education might be the extent to which resources (both human and financial) are available for education. Although it is uncertain as to whether educational resources will be abundant or scarce, undoubtedly, this issue is critical to the future of schools. And thus, for a variety of reasons, in some scenarios we can imagine a future world in which resources grow; in others, we can imagine a world in which resources shrink. “Resources for education,” with the characteristics at each end of the axis being labeled “abundant” or “scarce,” provides a reasonable axis for the framework.

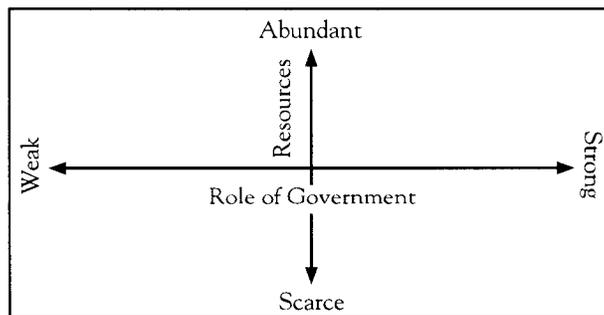


Figure 1: Four potential scenarios

There are a wide range of additional factors which could be selected and combined with one another to form a scenario framework. For example:

1. **Role of Government** — In the future, will government play a big role in determining what, where, when, and how students learn, or not? Will there be more regulation of education by governmental authorities, or will the free market prevail? Clearly, the way in which government controls, supports, or ignores education will make a difference in the ways in which the education system functions. Thus, for this axis, we could imagine two extremes of governmental influence over education, e.g., “strong government regulation” or “weak government regulation.”
2. **Technology Development** — Will technology advance exponentially, offering a wide array of learning options for students and teachers, or will developments in technology slow down or even stagnate? The ends of this axis might be labeled “accelerating” and “stagnating.”
3. **Social Values** — The question of what the public will value most a decade from now will certainly influence the future of schooling. There are many dimensions of social values that could have an impact on the future and identifying the ends of this axis can be difficult. Some suggestions include: “conservative/liberal;” “supportive of public education/not supportive;” or “community-focused/individually-focused.”
4. **Choice of Schools** — The extent to which parents or students can choose how, where and when to receive education as well as the amount and variety of choices available has changed dramatically even within the last decade. But there is significant controversy about this trend and various forces are extant which either promote or hinder the notion of “choice” in public education. Thus, “schooling choices,” whether “many/few;” “public/private;” or “customized/mass-produced,” presents another possible axis for the framework.
5. **Control of Learning** — Who decides the curriculum, the instructional delivery method, the time and place of learning? Today, in general, we have an institutionally-controlled system in which states and local districts determine standards and the structures for ensuring that children have an opportunity to gain proficiency on them. But, in an era of mass customization provided by technological advances, along with increasing diversity in the student population, will such a uniform system continue to prevail or will there be more pressure to individualize and customize learning to meet the unique needs and talents of students? Thus, an axis in which “control of learning” is defined as “institutionally-controlled” or “learner-controlled” is a possible critical uncertainty.

Once developed, the scenario framework yields four quadrants, each of which defines a particular world of the future. Figure 1 provides an example: The upper left quadrant will become a scenario in which the government has little or no control over the provision of education and resources for education are abundant. The scenario writers must consider how such a world could have developed. What caused the government to lose control over education? Did the so-called “revolt” against the No Child Left Behind Act, begun with a variety of state legislative actions and lawsuits against the federal department of education in 2005, result in a wholesale rejection of government involvement in public education? Or did the private sector simply provide more effective or desirable alternatives to the public system, causing a massive exodus of students from the public schools? Similarly, this is a world in which resources for education are abundant. How did that happen? What is the relationship between a reduction in government control and an increase in funding? Where did the money come from? The scenario must answer these and many other questions in order to paint a full picture of the world a decade from now.

Implications and Options

Scenarios are written not only to engage and challenge; they are also intended to provide organizations with strategic guidance for addressing key issues ahead. Considering the implications of each scenario, and the options states, schools, and districts have for responding to each future world, is a critical part of the process. Thus, once an organization has created these future worlds, it must reflect on the meaning of these future worlds for itself. What are the implications for a local school district of, for example, a world in which parents have access to publicly-funded tuition vouchers and a plethora of high quality, non-public educational choices? How should the district respond (some would say, compete) to such a scenario? What actions could the district take today to be ready to meet the challenges posed by that future? The answers to these and other questions will provide the foundation for a strategic plan focused on preparing the district for the future.

Taking the Next Steps

How are you preparing yourself and your school district, state agency, or other educational institution for the future? Would scenario planning be a useful strategy for you to use?

The Global Business Network, which has codified the scenario planning method and teaches it to organizational leaders around the world, recommends that you use the method only to address a challenging problem surrounded by a high degree of uncertainty and then only if your organization is open to dialogue, to change, and to considering futures other than the “official future” that has guided the organization in

the past. In addition, the organization's leaders must support and actively participate in the initiative and adequate resources must be allocated to support the effort over the long term. For organizations prepared to begin this process, McREL is available to help.

But, even without developing and writing your own scenarios, there are a number of ways in which you can move your organization into the future in a thoughtful, creative, and deliberate manner. Some ideas include:

- Create your own “drivers of change” framework. Identify an archivist and routinely collect information about indicators of change. Periodically review the table and discuss its implications.
- Establish a book group, starting with books from the list provided.
- Create an opportunity for others in your state to “brainstorm” about drivers of change and discuss critical uncertainties from their point of view.
- Include discussions of critical uncertainties and possible scenarios on the agendas of regularly established gatherings of key stakeholder groups.
- Expand your views by exchanging ideas with “remarkable people” outside of education.

In general, preparing for the future requires the discipline to constantly ask the question, what if? What if the structures that form the foundation of American schools today — like neighborhood schools governed by local school districts and state education agencies — change? What if NCLB and other accountability measures succeed in bringing all children to proficiency by 2014? What if these efforts fail? What if technological advances in virtual learning make the practice of bringing students together in one physical space unnecessary? What if a terrorist attack on a public school leads to a dramatic increase in home schooling because fearful parents do not want to risk sending their children to less-safe school buildings? What if the growing elderly population, faced with ever-increasing costs for health care, decline to support funding for public schools? What if the system is unable to attract and retain a sufficient supply of highly qualified teachers and administrators?

Conclusion

Throughout history, people have used stories to record the past and to shape the future. In sharing our story, as well as the stories we have written about the future (at www.mcrel.org), we hope to challenge, inspire, and motivate the education industry to prepare for a changing world. Indeed, we are convinced that if we, as an education

community, don't act now to respond to the anticipated changes, the legacy we leave for future learners will be insufficient to greet the future with confidence.

At McREL, we believe that we must obtain the best possible outcome from our current educational system, for the benefit of every student. The world has seen dramatic change in recent years, in education and elsewhere, and we as educators must prepare for the inevitable changes in the system of schooling to come. Scenario building has provided us with a platform for contemplating and preparing for the new systems of schooling to come. We hope the process can do the same for you.

"The narratives of the world are without number ... the narrative is present at all times, in all places, in all societies; the history of narrative begins with the history of mankind; there does not exist, and never has existed, a people without narratives."

— Roland Barthes

The future will come. The only question is whether we will be prepared to face it and survive and thrive, or whether we will be unprepared and become obsolete and irrelevant in the new world. We choose to be prepared, and hope you will join us.

Future Trends and Scenario Planning **References and Suggested Reading List**

- | | |
|--|---|
| <p>Buchen, I. H. (2004).
<i>The future of the American school system</i>.
Lanham, MD: Scarecrow Education
Subject: condition of education; forecasting;
future trends; educational change; educational
leadership</p> <p>Cornish, E. (2004).
<i>Futuring: The exploration of the future</i>.
Bethesda, MD: The World Future Society.
Subject: future trends; social prediction;
forecasting; methodology; social change; decision
making; change; change process; systems theory;
scenarios</p> <p>Didsbury, H. F. (Ed.). (2004).
<i>Thinking creatively in turbulent times</i>.
Bethesda, MD: World Future Society.
Subject: future trends; technology; futures</p> | <p>thinking; urban futures; automation; sustainable
development; scenarios</p> <p>Dychtwald, K. (1999).
<i>Age power: How the 21st century will be ruled by
the new old</i>.
New York, NY: Jeremy P. Tarcher/Putnam
Subject: aging in America; demographics;
social patterns; social predictions; future trends;
forecasting</p> <p>Friedman, T. (2000).
<i>The Lexus and the Olive Tree: Understanding
Globalization</i>
New York, NY: Anchor Books
Subject: globalization; economics; technological
innovations; capitalism; intercultural
communications; economic relations</p> |
|--|---|

- Friedman, T. L. (2005).
The world is flat: A brief history of the twenty-first century.
New York, NY: Farrar, Straus and Giroux
Subject: diffusion of innovations; information society; globalization; economics; trade relations; developing countries; business; geopolitics; politics; work; out sourcing
- Gladwell, M. (2002).
The tipping point: How little things can make a big difference.
New York, NY: Back Bay Books
Subject: social psychology; contagion; causation; change
- Gladwell, Malcolm (2005). *Blink: The power of thinking without thinking.*
New York, NY: Little, Brown and Company
Subject: decision making; intuition; spontaneity
- Glenn, J. C.; Gordon, T. J. (2005).
2005 State of the Future.
Washington, DC: 2005 American Council for the United Nations University
Subject: future trends; forecasting; nanotechnology; sustainable development; ethics; military; health
- Howe, N.; Strauss, B. (1993).
13th Gen: Abort, retry, ignore, fail?
New York, NY: Vintage Books
Subject: social conditions; future trends; United States history; power cycles; generational
- Howe, N.; Strauss, W. (2000).
Millenials rising: The next great generation.
New York, NY: Vintage Books
Subject: demographics; future trends; United States history; power cycles; youth
- Kotlikoff, L. J.; Burns, S. (2005).
The coming generational storm: What you need to know about America's economic future.
Cambridge, MA: The MIT Press.
Subject: demographics; generational differences; economics; age distribution; population forecasting; baby boomers; scenarios; future trends
- Lamm, R. D. (2003).
The brave new world of health care.
Golden, CO: Fulcrum Publishing
Subject: health care; forecasting; future trends; scenarios; quality of life
- Longman, P. (2004).
The empty cradle: How falling birthrates threaten world prosperity and what to do about it.
New York, NY: New America Books
Subject: future trends; social prediction; forecasting; social change; change process; fertility; economic development; demographic transition; developed countries; developing countries; labor supply; work; family
- Marx, G. (2000).
Ten Trends: Educating Children for a Profoundly Different Future
Arlington, VA: Educational Research Service
Subject: future trends; futurism; social forecasting; strategic planning
- Scarce, D.; Fulton, K. (2004).
What if? The art of scenario thinking for nonprofits.
Emeryville, CA: Global Business Network
Subject: future planning; scenario planning
- Schwartz, P. (1991).
The Art of the Long View: Planning for the Future in an Uncertain World
New York, NY: Doubleday
Subject: strategic planning; business forecasting; organizational change; management; leadership
- Schwartz, P. (2003).
Inevitable Surprises: Thinking Ahead in a Time of Turbulence
New York, NY: Gotham Books
Subject: future trends; futurism; social forecasting; strategic planning

Sterling, B. (2003).

Tomorrow now: Envisioning the next 50 years.

New York, NY: Random House

Subject: future trends; forecasting; social prediction; social change; education

Strauss, W.; Howe, N. (1997).

The Fourth Turning: An American Prophecy

New York, NY: Broadway Books

Subject: future trends; United States history; power cycles

Strauss, W.; Howe, N. (1991).

Generations: The History of America's Future, 1584 to 2069

New York, NY: Quill William Morrow

Subject: future trends; United States history; power cycles

Surowiecki, J. (2004).

The wisdom of crowds: Why the many are smarter than the few and how collective wisdom shapes business, economies, societies, and nations.

New York, NY: Doubleday

Subject: social science; societal trends; society; groups; democracy; information

Wagner, C. G. (Ed.). (2005).

Foresight, innovation, and strategy: Toward a wiser future.

Bethesda, MD: World Future Society.

Subject: innovation; future trends; forecasting; organizational change

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