



Education Imperatives for a New Generation

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Education Imperatives for a New Generation

Each generation of young Americans helps shape culture and society with new ideas—from the flappers of the 1920s to the Beats of the 1950s and the hippies of the 1960s. The generation of Americans coming of age in the early 21st century—the 70 million people born between 1982 and 2000—is no exception. Their effect on U.S. society will be different than that of past generations. They are growing up at a time when cell phones, handheld gaming devices, iPod players, and notebook computers are commonplace, and homes are filled with computers, TVs, digital video recorders, and game consoles. As a result, they're almost always interacting with digital devices—and often with more than one at a time.

This generation is also the most diverse ever. According to U.S. Census Bureau data, 34 percent are minorities and multi-ethnic, and nearly half of the nation's children under the age of five are minorities. And it will become even more diverse, as immigration is expected to fuel two-thirds of the national population growth between now and 2050. In Minnesota's public schools, for example, 80 languages are spoken. In California, that number is 300.

This new generation's comfort and familiarity with technology and its diversity affect its views of virtually everything—from education and entertainment to community and communication. These young Americans are fundamentally redefining the way Americans learn, work, and play.

The New Workplace and the Need for a New Worker

Just a few years into the 21st century, the world already seems a very different place. Our communities and the world have become more diverse, dynamic, and complex as technology and the Internet are permanently blurring—and sometimes seem to be dissolving—geographic, economic, and cultural borders.

These changes create new opportunities and challenges for business. While the U.S. economy continues to grow at an annual pace of about 3 percent, the growth of developing countries is nearly double that number, and U.S. business investment and operations increasingly reflect that trend. In fact, international commerce accounts for a quarter of the American economy today and a third of U.S. economic growth (Foreign Policy Association, 2000).

A key requirement for American companies doing business internationally is having a workforce equipped to effectively translate American business models and offerings to foreign marketplaces. Yet, according to a 2002 survey by the Committee for Economic Development, 30 percent of large U.S. businesses believe that a "provincial, monolingual workforce" has cost them global business opportunities (McGray, "Lost in America," *Foreign Policy*, May/June 2006).

“Hard” skills like language proficiency are obviously critical to success in the global marketplace, yet fewer than one-tenth of American college students enroll in foreign language classes and just one percent study abroad (Committee for Economic Development, 2006). But language skills are just part of the equation. As a recent *Harvard Management Update* notes, American managers also need better “soft” skills, including openness to new and different ideas and a belief that differences matter.

While U.S. education led the world through much of the 20th century, we are now falling behind. According to a paper developed for the New Commission on the Skills of the American Workforce (Uhalde and Strohl, 2006), the United States has moved from first to third place in the percentage of working age adults who have completed high school. As the authors note, given that “a highly educated and skilled workforce is one of the indispensable keys to economic success,” this decline has alarming implications.

A 2006 survey of leaders from a consortium of business research organizations finds the incoming generations of workers sorely lacking in much needed skills. The report concludes: “The future workforce is here, and it is ill-prepared” (*Are They Really Ready to Work?*, October 2006).

Education in the 21st Century: *What We Teach Must Change*

Given the dramatic changes in today’s generation of students and the workforce they will be entering, American education faces challenges never seen before. At the same time, we have never had more opportunities to overcome them.

Preparing our students for their future will require significant change in both what we teach and how we teach. As Arizona Governor Janet Napolitano notes, “We must prepare young people for a brain-centered economy whose one constant is rapid change. The predominant classroom model of a single teacher lecturing to 20, 30, or even more students reflects the production-line model of the Industrial Age, not the technological demands of our Information Age” (Napolitano, April 2004).

Recent education initiatives, including the No Child Left Behind Act of 2001, have been instrumental in focusing attention on the critical need to improve K-12 education. And there is more we can do.

While continued emphasis on core subjects is essential, schools must increasingly focus on science, technology, engineering, and math (STEM) curriculum while at the same time adding global content, including foreign language, geography, and culture to ensure students are prepared to compete effectively in a global marketplace.

Equally important, students must master more than content—they must acquire the ability, as futurist Alvin Toffler puts it, to “learn, unlearn, and relearn.” Students need to learn to read critically and to speak and write persuasively. They need to apply mathematical and scientific principles to solve real-world problems. And they need to be able to view current events through a lens that sees beyond traditional borders.

The Partnership for 21st Century Skills, a group of business and education leaders including Apple that advocates education reform, has developed a framework for 21st century learning:

- Core subjects, defined by the No Child Left Behind Act as English, reading, or language arts; mathematics; science; foreign languages; civics; government; economics; arts; history; and geography.
- 21st century content, which includes content areas typically not taught today but critical to success in a global community. These areas include global awareness; financial, economic, business, and entrepreneurial literacy; civic literacy; and health and wellness awareness.

- Learning and thinking skills, including critical-thinking and problem-solving skills, communications skills, creativity and innovation skills, collaboration skills, contextual learning skills, and information and media literacy skills.
- Information and communications technology (ICT) literacy, which is the ability to use technology to acquire and develop 21st century content knowledge and skills.
- Life skills, including leadership, ethics, accountability, adaptability, personal productivity, personal responsibility, people skills, self-direction, and social responsibility.

In this 21st century context, the definition of achievement and literacy is much broader than the mastery of core subjects. It must also include knowing how to mine the Internet effectively and efficiently and to understand information presented in charts, graphs, audio, video, and animation. It includes experiencing new approaches to learning that are inquiry-based, collaborative, and even virtual. In other words, students need to discover the joy of curiosity, learning, and invention. To remain literate, they will need to continue to learn every day of their lives.

How We Teach Must Change

Students today are just as likely to sport earbuds as earrings. According to the 2005 Pew Internet & American Life Project, 87 percent of 12- to 17-year-olds—or 21 million young people—are Internet users, an increase of 24 percent from 2000. Three-quarters of today's teens use at least two digital devices daily, whether it's talking on their cell phones, text messaging a friend, doing email or instant messaging, or going online (BBDO Energy, 2005).

And increasingly, today's students are multitasking. A 2003 study by the Henry J. Kaiser Family Foundation showed that about one-third of third through twelfth graders report that they either talk on the phone, instant message, watch TV, listen to music, or surf the Internet most of the time that they're doing their homework.

This may horrify their parents—many of whom never touched a computer until they went to college or found their first job—but research shows that this constant exposure to multiple, overlapping sights and sounds has actually affected the neural pathways in the brains of today's youth. As a result, some researchers contend, multisensory input actually helps students learn, retain, and use information better (Bransford, et al, 2000).

Further, according to the Kaiser study previously cited, the seeds for this type of electronic learning are planted well before children enter school. Ellen Wartella, dean of the College of Communication at the University of Texas and coauthor of the study, said, "Today's preschoolers are starting to use media much younger than we thought. Where previous generations were introduced to media through print, this generation's pathway is electronic. This is a trend we must follow."

It's a well-established principle in education that students learn better when they are engaged. Research about what engages students today points to technology, showing that students learn better when they are using technology because they are more engaged by it than by activities that use pencil and paper (The Greaves Group, the Hayes Connection, *America's Digital Schools 2006*). Research also shows that students not only spend more time with technology-based activities, they think about what they are doing. And often, more time and more thought equal more success.

While schools generally have made strides to better address the needs of students seemingly weaned on technology, many still emphasize the learning modality least preferred by students—lecture-centered instruction. The result is a disconnect that alienates today's generation of learners.

In fact, recent research shows that this traditional pedagogy is a key factor behind the alarming high school dropout rates in the United States. According to “The Silent Epidemic: Perspectives on High School Dropouts,” a report published in March 2006, 47 percent of dropouts cited boredom as the major reason they quit school. This was true for students in both suburban and inner city schools and for students with both good and poor grades. A separate study corroborates the dangers of disengagement, finding that “40 percent of high school students were just going through the motions at school; [more than] one-third of students surveyed said they got through the school day ‘goofing off’ with their friends and neither tried hard nor paid attention when in class” (Cohen, 2001).

Lack of student engagement and the failure to complete high school are critical national issues. Each year, about one-third of public high school students fail to graduate with their class. Nearly half of all Latino, African-American, and Native American students fail to graduate, and the gap between whites and non-whites is widening (Bridgeland et al., 2006). If these trends continue, per capita personal income in the United States will fall 2 percent between 2000 and 2020—an alarming reversal of the 41 percent growth seen over the prior two decades (National Center for Public Policy and Higher Education).

While no generation of students has been enamored of traditional modes of teaching, today’s students, as noted previously, are even less tolerant of it. They want an active learning experience to match their active lifestyles—preferably enabled by technology.

Even when learning is enabled by technology, teachers continue to play a pivotal role in education—in fact, their role expands. In addition to ensuring that their students master a body of knowledge, they’re increasingly called upon to inspire creativity and facilitate the acquisition of the critical thinking and analysis skills described previously. In this setting, teachers often act as consultants and coaches, assigning more individual and group projects and then walking around the classroom to provide real-time, individualized direction, feedback, and assessment.

As Will Richardson, learner in chief at Connective Learning and publisher of the weblogged blog, notes, “In this environment, where it’s easy to publish to the globe, it feels more and more hollow to ask students to ‘hand in’ their homework to an audience of one.... And when many of our students are already building networks far beyond our classroom walls, forming communities around their passions and their talents, it’s not hard to understand why rows of desks and time-constrained schedules and standardized tests are feeling more and more limiting and ineffective” (*Edutopia*, October 2006).

Learning to Go

Just as technology and the Internet are expanding the borders of business and economies, so, too, are they transforming K-12 schools. As Calvin Baker, superintendent of the Vail School District in Vail, Arizona, observes, “Our students will be living and working in a world where technology will be integral to most everything they do. It should be equally integral in the schools preparing our students for that world” (eSchool News, February 2006).

Schools and districts are at different points in their ability to bring enabling technology, content, and training into their teaching process, either because of resources or readiness. Some schools have technology tools in a lab and are not ready to go further but want to maximize their use of the lab for student achievement. Others are putting mobile labs into classrooms, training teachers, and making technology a regular part of the coursework and the learning experience. Others are finding ways to use innovative new technology such as iPod with or in place of computers to encourage mobile

learning and to provide a medium for audio/visual learners. Still others, including those in Vail, Arizona, adopt 1 to 1 learning programs, which include assigning a notebook computer to each student and teacher, and replacing traditional textbooks with digital content and information.

One Student. One Computer.

With the cost of notebook computers decreasing, the availability of wireless connectivity increasing, and the number of successful initiatives multiplying, more districts and schools are considering 1 to 1 learning programs. Defined as “an environment where students and teachers have around-the-clock use of a notebook computer as well as online and offline access to educational software and digital authoring tools,” 1 to 1 learning programs represent a major shift in K-12 education. According to the America’s Digital Schools 2006 report, 24 percent of U.S. school districts are in the process of transitioning to 1 to 1 learning programs.

Different districts and schools have their own unique objectives for their programs, but most focus on one or more of the following goals:

- Improving students’ *academic achievement* through the use of technology
- Assuring *equity* in access to digital resources
- Promoting *economic development* by better preparing students for today’s workplace
- Enhancing *teaching* to transform the quality of instruction

While 1 to 1 learning programs require a significant commitment to technology, it is important to view them as learning programs, not technology initiatives. As Bette Manchester, Director of Special Projects in the Maine Learning Technology Initiative, notes, “1 to 1 computer access changes everything. But let me make this crystal clear: This is not about technology or software, it is about teaching kids” (*Laptops for Learning*, March 2004).

Apple Will Continue to Lead Change

The 21st century poses significant challenges for schools, educators, parents, and students. Today’s students need to be well schooled in the traditional curriculum, but they also need up-to-date skills to succeed personally, academically, and professionally. 1 to 1 learning programs are ideally designed for 21st century education, providing students and teachers with the tools and environment to access information, think, collaborate, create, and acquire new skills—anytime and anywhere.

Implementing a 1 to 1 learning program is not something that districts and schools can accomplish overnight. It’s a long-term undertaking that requires leadership, vision, and a master plan to guide every aspect of the process. But it can be done. And there has never been a better time.

As a partner to education for nearly 30 years, Apple has led the way in providing educators with powerful, easy-to-use technologies to advance teaching and student learning. Apple’s digital authoring tools used in teaching today include iWork, iPhoto, iWeb, iMovie HD, iDVD, GarageBand, and iTunes. Apple notebooks and iPod have also become common fixtures in schools, with Apple providing lesson plans and sample projects teachers can use to put these tools to work in the classroom and beyond.

Apple also provides a range of resources for districts and schools considering 1 to 1 learning programs, and Apple professionals are available to partner with them to evaluate, design, and implement those programs. For more information, call an Apple consultant toll-free at 1-800-800-2775.

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