Equipping Every Learner for the 21st Century

An Action Plan for Educational Transformation

Much of the energy that drives the global economy in the 21st century will be brain power generated in the classroom. Wherever you live and whatever you do, you have a personal stake in quality education. Without a highly skilled workforce, no community can progress, no country can prosper, and no industry can grow and thrive. Yet despite the best efforts of educators, governments, and other stakeholders, schools around the world are struggling to meet the evolving requirements of today's students and their future employers.

Why Today's Learning Isn't Working

Too much of the curricula in 21st century schools is still focused on equipping students for life in the last century, rather than preparing them to face the challenges of the present—and the future.

Underperforming investments.

Many developed countries are spending more than ever on education, only to see a poor return on their investment. For example, the United States has increased spending per pupil by more than 70 percent in the last 25 years, but educational performance as measured by achievement tests has scarcely budged. An increasing number of students enter higher-education or vocational institutions without adequate preparation, triggering further spending to bring them up to speed. And when those students look for jobs, the academic and vocational skills they have acquired—or worse, failed to acquire—are often out of alignment with the abilities the marketplace needs and employers value.

In developing countries a quality education system offers a way out of the endemic cycle of poverty and underemployment that constrains economic and social development. The greatest poverty generally occurs in educationally underserved nations where public funding is in short supply. An effective strategy for these countries is to invest in 21st century pedagogy, with educational content delivered via economical wireless communications infrastructure and Web 2.0 technologies. This allows them to leapfrog expensive intermediary educational reform and achieve results more quickly.

Changing jobs and capability gaps.

In the developed and developing world alike, economies are shifting from low-skilled, localized labor to globalized knowledge work that requires considerable training. So-called soft skills such as interpersonal communications and problem solving offer the most powerful keys to success in the modern economy, replacing the narrowly focused, repetitive skills that are the earmarks of the industrial age. Literacy, numeracy, and other fundamentals are still necessary prerequisites for employment, but today's knowledge workers must also be trained to think creatively, innovate widely, and use technology-based collaboration tools effectively.

However, traditional education systems have created capability gaps by not keeping up with the times. Many class assignments are still devoted to memorizing facts and procedures instead of teaching students how to handle information and collaborating with peers. Employers complain that what job applicants have been taught does not measure up to what the jobs demand, even at the entry level. Moreover, even seemingly pragmatic, job-specific vocational training may not provide students with the mental flexibility they must have to deal with fast-changing industries and to grow in their careers.

Connected students, disconnected curricula.

How can traditional modes of instruction engage and inspire students when life outside the classroom has changed so dramatically? For many of these highly connected learners, class time is the only time in their day when they are disconnected—from voice and text communication, from e-mail, and from their favorite Websites. In most countries cell phones and video gaming technology has become ubiquitous among young people. And the changes and opportunities brought about by the Web 2.0 social networking phenomenon have swept the globe.

Curriculum plans in many schools have a long way to go to catch up with these connected students. Many classrooms currently provide only limited opportunities to take advantage of the creative and collaborative capabilities of new technologies. For instance, proven computer-aided educational tools such as simulations that accurately reflect actual job situations have not been widely adopted. Learning continues to be a solo activity, which is the opposite of how tasks are accomplished in the modern cooperative work environment.

Achieving Educational Transformation

Using the parlance of educational technology, Education 1.0 represents education as it was practiced during most of the 20th century: problematic access, uneven quality, variable practices and standards, and limited performance management. Beginning in the early 1990s, educators initiated the Education 2.0 phase by crafting policies aimed at professionalizing processes, setting standards, and upgrading capabilities. Still, the emphasis of Education 2.0 has been on reforming the existing paradigms rather than transforming them.

What we now see on the horizon is Education 3.0, a new phase in which educators will develop and implement a transformative template for 21st century learning. Education 3.0 builds on the Education 2.0 reforms, but adds the power of cutting-edge communications, the latest pedagogical tools, and collaboration technologies to equip learners for work and life in the present age. This paradigm shift has four key aspects: teach 21st century skills, employ 21st century pedagogy, integrate 21st century technology, and lead with a 21st-century-style vision.

Skills to match the challenges.

A number of educational programs already address the relevant skills issue. The Partnership for 21st century skills, for example, is a U.S. advocacy organization formed in 2002 to develop curricula that combine core subjects such as language, mathematics, and science with contemporary trends like environmentalism and globalization. Using this program as a framework, the curricula may be extended and strengthened with the addition of soft skills like innovative thinking, problem solving, negotiation, and decision making. In the United Kingdom, educators have redesigned the science curriculum to include teamwork, creative problem resolution, and technology enhancements.

While STEM (science, technology, engineering, and mathematics) disciplines are increasingly sought out by employers, there also must be room in the new curricula for encouraging creativity and collaboration in the humanities and arts. Innovative teaching methods allow critical new skills to be transferred to students working in virtually any subject area. In this regard, how we teach and what we teach can be unified into a mutually reinforcing system. Additional synergies can be attained by making sure teachers are well qualified and get adequate coaching, training, and support as they adopt new pedagogical practices.
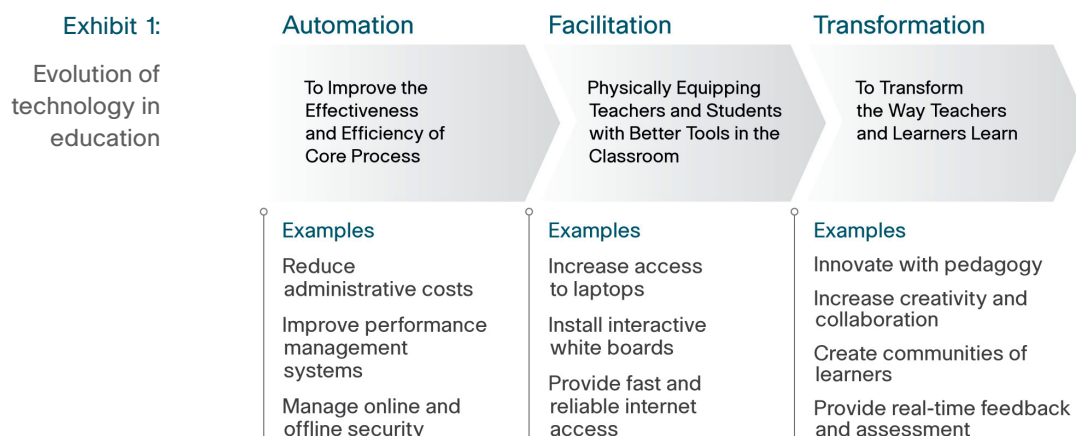
Innovating how we learn.

Policymakers are increasingly turning to instructional approaches that reflect a "constructivist" view of pedagogy, the idea that knowledge is not a universe of facts and ideas that exist outside the learner but rather a mental model that learners assemble for themselves based on their own identities and experiences. What this means in practical terms is that teaching should be adapted to individual students, within the context of the student's personal goals, community, and cultural milieu. To do this, teachers need to be able to draw from a larger and more sophisticated repertoire of proven instructional styles and tools than were available to them in the past.

Another crucial aspect of pedagogical reform is creating learning environments that draw students in and incorporate individual and group activities that are important to them. This emphasis on authenticity might involve projects in which students actually build something—a computer network for their home, for instance—or conduct research that is useful beyond the classroom. Interdisciplinary and project-based teaching furthers the 21st century education agenda by fostering teamwork and reinforcing lessons with hands-on expertise. In addition, educators must be able to assess the success of their efforts by accurately measuring outcomes, which can be facilitated by using independent organizations and objective metrics to track performance.

Technology as a knowledge enabler.

The same technologies that created the Internet and the information revolution have the power to transform education as well. Information technology has the proven potential to deliver better instructional materials to the classroom, better training and support to the instructors, and better collaborative and personalized resources to students. To adequately prepare students for the future, learning environments must give them the digital tools required to find, select, structure, and evaluate the mass of information that already permeates 21st century business and social life.

Exhibit 1:

Evolution of technology in education

Automation	Facilitation	Transformation
To Improve the Effectiveness and Efficiency of Core Process	Physically Equipping Teachers and Students with Better Tools in the Classroom	To Transform the Way Teachers and Learners Learn

Examples	Examples	Examples
Reduce administrative costs	Increase access to laptops	Innovate with pedagogy
Improve performance management systems	Install interactive white boards	Increase creativity and collaboration
Manage online and offline security	Provide fast and reliable internet access	Create communities of learners
		Provide real-time feedback and assessment

Source: Team Analysis

Of course, technology has been playing a role in education for some time. But most schools have not yet taken full advantage of the benefits offered by intelligent, multimedia-capable networks and collaboration technologies. Three significant barriers must be overcome before this technology can help transform learning and meet ambitious objectives: broadband access must be extended to those areas where it is currently unavailable or unaffordable; professional development needs to include training in the new techniques and resources; and the right technology has to be provided at the right time to bring new educational techniques and policies into alignment with current student populations.

Leaders make the best reformers.

Accomplishing a successful educational transformation will require informed and impassioned leadership at every level, from government ministries through institutions of higher learning and school districts down to individual schools, teachers, and classrooms. It will also require close partnerships among educators, government entities, and private sector participants, all of whom have a compelling stake in educational improvement.

Some of the factors that will help ensure instructional leadership include attracting highly qualified people to administrative positions, developing leadership qualities among the teaching staff, and nurturing institutional environments that encourage leaders to innovate and propagate their successful innovations throughout education systems.

Summary

The new paradigm for 21st century education will require a holistic transformation of learning systems, guided by a comprehensive roadmap that covers curricular and assessment reform, new teacher recruitment and training strategies, leadership development, and the integration of collaborative technologies. This transformation will be facilitated by exceptional teachers and supported by technologies that empower individuals to create, adapt, and share content. Although this vision is global, the path requires a local journey, one that recognizes and responds to opportunities and challenges at the community level. The ultimate goal: a systematic restructuring that results in a quantum improvement in both the quality and accessibility of education worldwide.

To learn more about these engagements and how you can partner with Cisco to initiate change go to www.transformglobaleducation.org.

Global Destination, Local Journeys

Cisco believes that 21st century learning is a global destination that will require local stops in villages, towns, and cities worldwide. Reaching that destination will require the cooperation of local officials and institutions as well as respect and understanding for diverse cultures and individual learners. In our conversations with educators and other stakeholders worldwide, as well as in our own educational initiatives, we are seeing a pattern of excellence based on these propositions:

· 21st century pedagogy that emphasizes learner-centric teaching, active facilitation, and hands-on activities will lead to higher levels of student participation and better outcomes.

· Technology can make a real difference in the classroom, but it must be applied thoughtfully to ensure cost effectiveness and strike the right balance among hardware, software, connectivity, and content.

· Teaching the teachers to use the new pedagogy is critical to instructional success, but these skills must be supplemented by effective teaching materials, peer support, and educational leadership.

· Transformation and lasting reform will require a broad coalition of stakeholders in both the public and private sectors.

Cisco's Global Education team is working with groups across the company to build on successes and lessons learned to offer an expanded perspective on education. The company has initiated a number of engagements aimed at helping education system leaders address the profound challenges that face them as the 21st century continues to unfold.

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