



Core Curriculum 2.0

*Don't tear schools down
and start over.
Upgrade how—and
what—you teach
instead*

Patte Barth

Education experts often cite the need to “reinvent” schools for the 21st century. Futurist Alvin Toffler says that to do so “we should be thinking from the ground up.” One website devoted to 21st century schools declares that the new education “is bold. It breaks the mold. It is flexible, creative, challenging, and complex.”

It's exciting to imagine a brave new world in public education. All around us, we see how much the Information Age is changing both our working and day-to-day lives. It only makes sense that school districts will need to adapt to these new demands and technologies.

Having the postsecondary credential clearly gives individuals a leg up in the workplace. But research is finding that a worker's literacy levels are as important, if not more so.

But do we really need to start “from the ground up”? Is nothing working now? How do you even begin to “reinvent” nearly 100,000 public schools? And what are the consequences if we don't?

For the past year, we have been looking into these questions at the National School Boards Association's Center for Public Education. We asked Craig Jerald, a Washington, D.C.-based education author and analyst, to pull together the best thinking about the changing world and describe its implications for how schools need to prepare students. Here's what we discovered:

■ **Schools don't need to start from scratch.** We produce students, right now, who graduate from public schools and succeed in college and high-skilled jobs. They are problem solvers and creative thinkers. They volunteer in their communities. They vote. A growing body of evidence shows that these individuals were most likely to have had the benefit of a rigorous, college preparatory curriculum in high school—something schools have provided for some time, at least to some students.

■ **The traditional curriculum is not enough.** The knowledge and skills learned in the traditional college-prep curriculum are still essential in the 21st century. But this is just the beginning. Students need to be able to think critically about these concepts, make connections between subjects, and apply this learning to new information and unfamiliar situations. In short, they need to do more than just follow directions, carry out learned procedures, or repeat information because computers are increasingly doing those things for us.

We don't have to reinvent public schools. There's no need to break the mold and start again. But public education does need an upgrade—call it a core curriculum, version 2.0. This upgrade can and should build on the academic core many students already get. But it also should integrate features typically associated with 21st century education—technology, innovation, problem solving, teamwork, and more—to give all students the tools they need for post-high school success.

How high should curriculum aim?

Looking at what prepares individuals for success in this century, one fact comes out loud and clear: Postsecondary education is more important than ever.

According to the U.S. Department of Labor, two-thirds of new jobs being created will require some postsecondary education or training. Prominent among these fields are network systems analysts, computer software engineers, and health care workers at all levels.

In addition, the income benefit for college or postsecondary training has skyrocketed over the last three

decades. Since 1973, family income related to earners with a bachelor's degree has risen by 39.5 percent. In contrast, the high school graduate benefit has risen a modest 5.6 percent while families dependent on dropouts have seen income plummet by 13.3 percent.

The value of college is also growing in jobs that previously required only a high school diploma. According to researcher Anthony Carnevale, 38 percent of office workers in 1973 had some college. Now they represent 69 percent of office workers, with 37 percent holding bachelor's degrees. In manufacturing, the share of college-educated workers has tripled from 12 to 36 percent over the same period.

Having the postsecondary credential clearly gives individuals a leg up in the workplace. But research is finding that a worker's literacy levels are as important, if not more so. Studies have shown, for example, that good readers have a big advantage. An analysis of the 2003 National Adult Literacy Survey showed a direct relationship between higher literacy levels and job success. The more literate the individual, the more likely he or she is to volunteer in the communities and to vote, so there is a civic advantage as well.

The relationship between literacy and after-high school outcomes is particularly strong in math. According to one study, students' math literacy level at the end of high school was a better predictor of going to college, completing a degree, and earning higher wages than work habits, leadership skills, sports-related teamwork, or positive outlook. Another study related high earnings as an adult to having taken advanced math courses in high school.

College prep: Not just college anymore

Most students are aware of the benefits of postsecondary education and are enrolling in college in record numbers. According to the Bureau of Labor Statistics, 68.6 percent of 2008 high school graduates were enrolled in colleges or universities the following October. About six in 10 were in four-year institutions.

Given the significant college advantage and the numbers of graduates going there, schools should focus on preparing students to be successful in postsecondary education. But many educators and parents fear this emphasis neglects

students who don't want to go to college. They wonder if these students really need the college prep curriculum.

Increasingly, the answer is yes. Many jobs once thought of as "blue collar" are becoming more demanding and consequently require higher levels of skills. The screening test used for admission to electrician apprenticeship program, for example, includes a section on reading technical information and a second section devoted to algebra and functions.

My brother sees such "upskilling" firsthand. He works for a manufacturing plant outside of Pittsburgh, where among other duties, he recruits prospective workers from local high schools. He always begins with the ninth-grade class. The reason? He wants to make sure that these non-college bound students are enrolled in a math sequence through trigonometry so they can enter his apprenticeship program.

The curriculum that once prepared students for college serves student well regardless of where they go following high school. It does, in fact, define the core academic content for all.

Going beyond the core

Despite its benefits, however, the traditional college prep curriculum does not do enough to prepare young people for 21st century life and work. According to employer surveys, the skills that are expected to become most important for success in the workplace are the ability to think critically and solve problems; apply information technology; collaborate as part of a team; and the ability to be creative and innovative.

At the same time, employers don't rate new workers highly on their abilities in these areas, particularly workers with only high school diploma. Over two-thirds of employers said that high school graduates were "deficient" in problem solving and critical thinking. Entrants with a bachelor's degree fared better, but less than a third were rated as "excellent" in these areas.

Schools know that developing these skills needs to be part of their program. But their attempts have been hamstrung by the absence of tangible definitions for what these skills look like in practice. To be sure, some students have developed them in school, but for the most part, it has not been by design. Without clear definitions, it is difficult if not impossible to teach 21st century skills explicitly so that all students develop them.

Work is ongoing in this area, and one thing we have learned: Skills can't be taught in isolation from academic content. According to the National Research Council, "Abilities to think and solve problems depend strongly on a rich body of knowledge about subject matter." This also applies to such skills as "creativity" and "innovation." Far from being an elusive, intrinsic quality, researchers have found that creativity can be cultivated in all subject areas through the combina-

tion of deep expertise in one area, broad knowledge of many areas, and the encouragement to take risks.

Core curriculum 2.0 for all

To prepare students for today and for the future, a core curriculum (version 2.0) needs to combine the content of the traditional college prep curriculum with explicit attention to 21st century skills.

The foundation is partly in place. According to the U.S. Department of Education, enrollments in high-level courses have exploded over the past two decades, particularly in math. In 1982, fewer than half of high school graduates had completed Algebra II or higher; today that figure is three-quarters. Likewise, the average number of credits earned by graduates has risen from 21.7 to 25.8 over the same time period.

This is not to say it will be easy. Schools face a double challenge in trying to get all students through high school with high-level knowledge and skills. And we know that some schools have much further to go than others. Nationally, only an estimated 70 to 80 percent of students finish high school with a regular diploma or better. The figures for students of color and students from low-income families are even lower.

And those who graduate don't necessarily have the skills needed to succeed in postsecondary education. According to research by ACT, only 22 percent of 2008 high school graduates who took the college admissions exam met the benchmark for college readiness in all four subject areas tested.

But it's not impossible. In fact, the integration of 21st century skills into the academic program will provide relevance along with rigor, which is so important to engaging students in the work of school. Several models of programs have done so successfully, such as career academies that combine work training with college prep curriculum, dual enrollments in high school and community college courses, and internships in cooperation with local businesses. We also can't overstate the value of technology in the classroom. The effective use of these new tools can make difficult concepts easier to understand, model real-world problems, and get students excited about learning.

The new century is nearly a decade old. At this point, whatever public schools do is de facto 21st century. Our job is to make sure that all students graduate ready to face whatever challenges the century throws their way. ■

Patte Barth (pbarth@nsba.org) is director of the Center for Public Education, an initiative of the National School Boards Association. This article owes a great deal to the report, *Defining a 21st Century Education*, by Craig D. Jerald, which can be downloaded at www.centerforpubliceducation.org.