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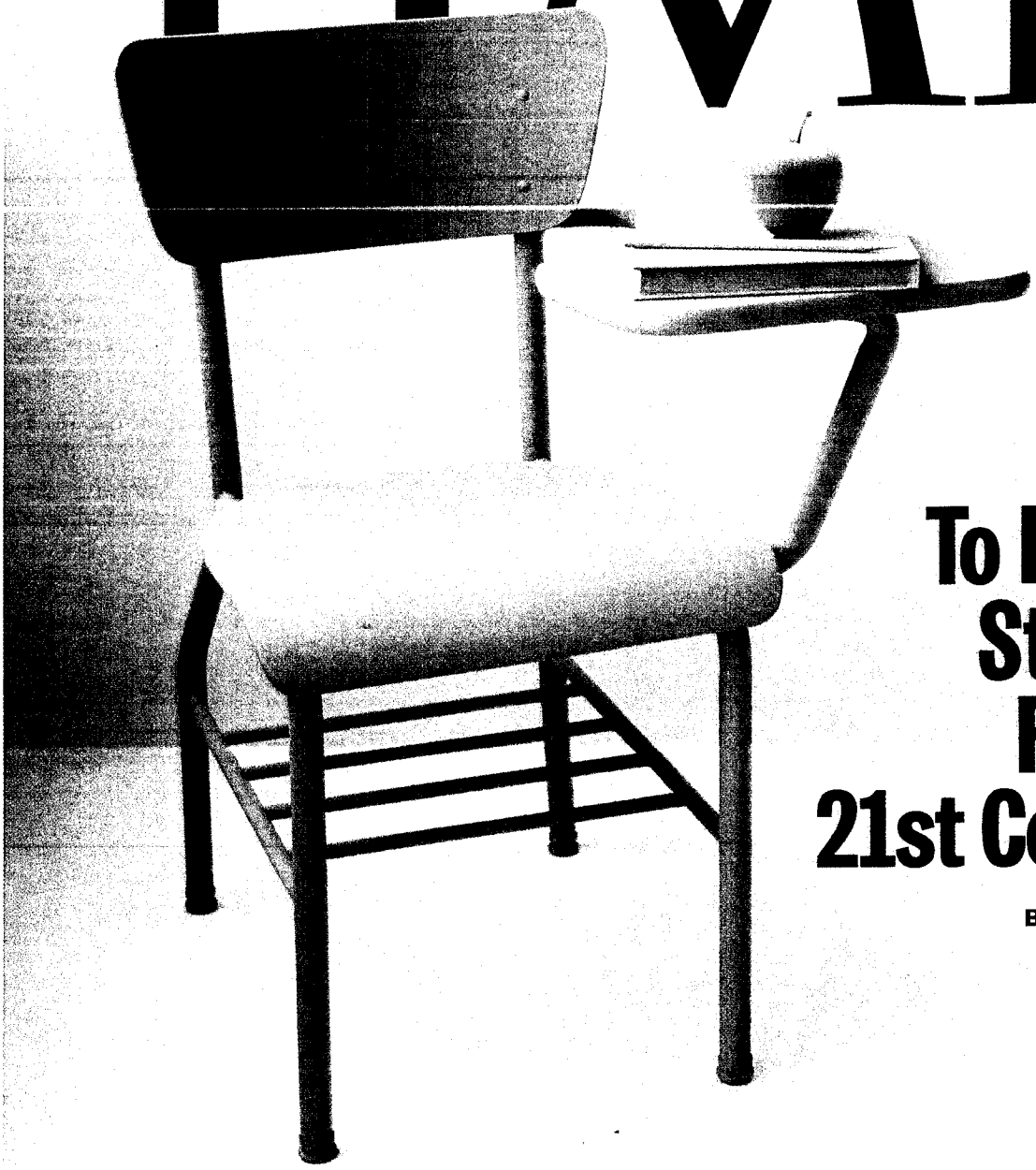

How To Build a Student For the 21st Century

BY CLAUDIA WALLIS & SONJA STEPTOE

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How to Bring Our Schools Out of the 20th Century

{ By CLAUDIA WALLIS and SONJA STEPTOE }

THERE'S A DARK LITTLE JOKE EXCHANGED BY EDUCATORS WITH a dissident streak: Rip Van Winkle awakens in the 21st century after a hundred-year snooze and is, of course, utterly bewildered by what he sees. Men and women dash about, talking to small metal devices pinned to their ears. Young people sit at home on sofas, moving miniature athletes around on electronic screens. Older folk defy death and disability with metronomes in their chests and with hips made of metal and plastic. Airports, hospitals, shopping malls—every place Rip goes just baffles him. But when he finally walks into a schoolroom, the old man knows exactly where he is. "This is a school," he declares. "We used to have these back in 1906. Only now the blackboards are green."

Photographs for TIME by Jason Fulford and Paul Sahre

American schools aren't exactly frozen in time, but considering the pace of change in other areas of life, our public schools tend to feel like throwbacks. Kids spend much of the day as their great-grandparents once did: sitting in rows, listening to teachers lecture, scribbling notes by hand, reading from textbooks that are out of date by the time they are printed. A yawning chasm (with an emphasis on yawning) separates the world inside the schoolhouse from the world outside.

For the past five years, the national conversation on education has focused on reading scores, math tests and closing the "achievement gap" between social classes. This is not a story about that conversation. This is a story about the big public conversation the nation is *not* having about education, the one that will ultimately determine not merely whether some fraction of our children get "left behind" but also whether an entire generation of kids will fail to make the grade in the global economy because they can't think their way through abstract problems, work in teams, distinguish good information from bad or speak a language other than English.

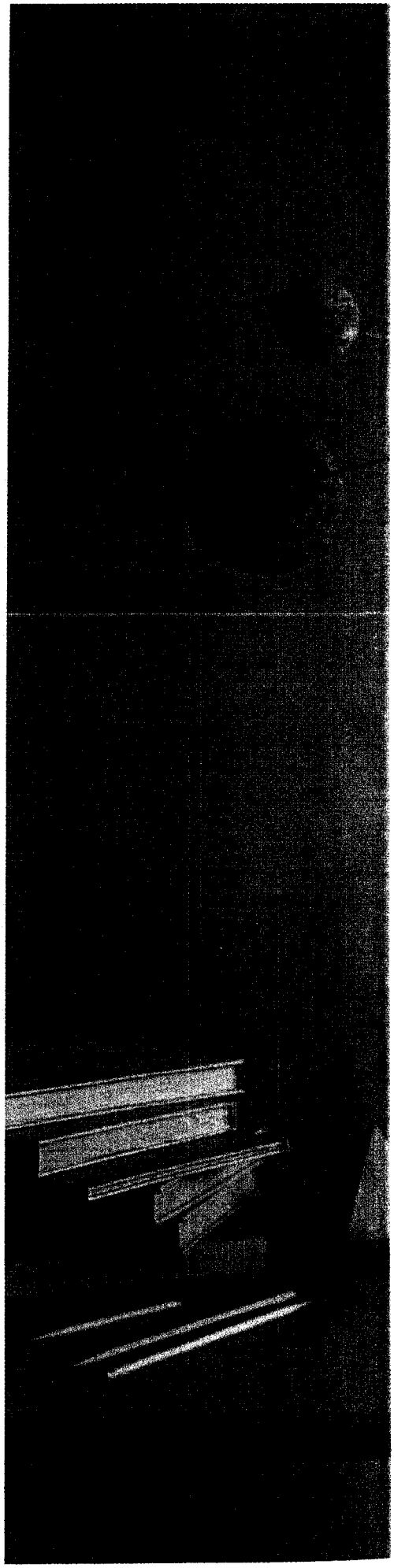
This week the conversation will burst onto the front page, when the New Commission on the Skills of the American Workforce, a high-powered, bipartisan assembly of Education Secretaries and business, government and other education leaders releases a blueprint for rethinking American education from pre-K to 12 and beyond to better prepare students to thrive in the global economy. While that report includes some controversial proposals, there is nonetheless a remarkable consensus among educators and business and policy leaders on one key conclusion: we need to bring what we teach and how we teach into the 21st century.

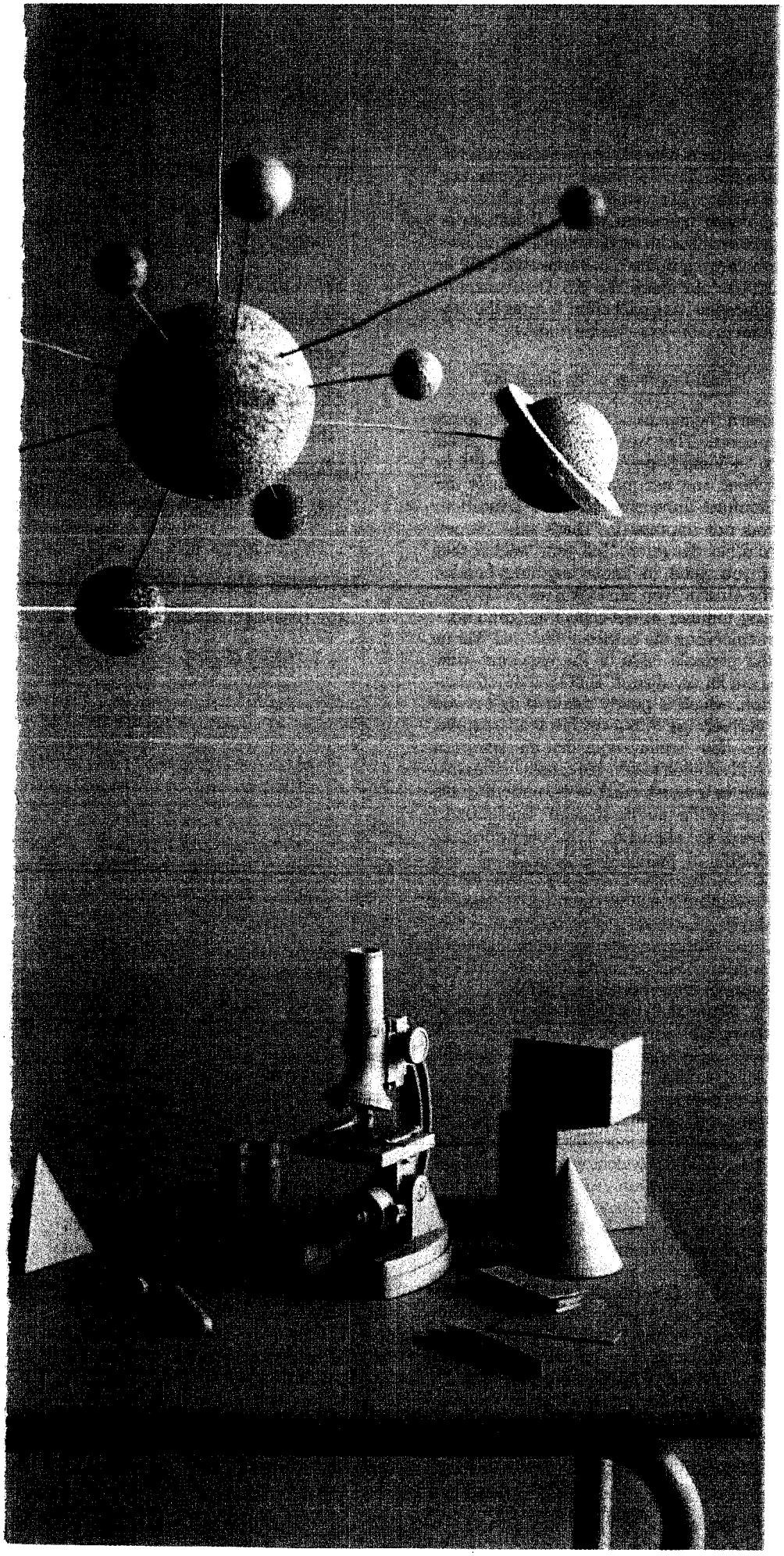
Right now we're aiming too low. Competency in reading and math—the focus of so much No Child Left Behind (NCLB) testing—is the meager minimum. Scientific and technical skills are, likewise, utterly necessary but insufficient. Today's economy demands not only a high-level competence in the traditional academic disciplines but also what might be called 21st century skills. Here's what they are:

Knowing more about the world. Kids are global citizens now, even in small-town America, and they must learn to act that way. Mike Eskew, CEO of UPS, talks about needing workers who are "global trade literate, sensitive to foreign cultures, conversant in different languages"—not exactly strong points in the U.S., where fewer than half of high school students are enrolled in a foreign-language class and where the social-studies curriculum tends to fixate on U.S. history.

KIDS NEED TO LEARN HOW TO LEAP ACROSS DISCIPLINES BECAUSE THAT IS HOW BREAKTHROUGHS NOW COME ABOUT. IT'S INTERDISCIPLINARY COMBINATIONS—DESIGN AND TECHNOLOGY, MATHEMATICS AND ART—THAT PRODUCE YOUTUBE AND MYSPACE

Thinking outside the box. Jobs in the new economy—the ones that won't get outsourced or automated—"put an enormous premium on creative and innovative skills, seeing patterns where other people see only chaos," says Marc Tucker, an author of the skills-commission report and president of the National Center on Education and the Economy. Traditionally that's been an American strength, but schools have become less daring in the back-to-basics climate of NCLB. Kids also must learn to think across disciplines, since that's where most new breakthroughs are made. It's interdisciplinary combinations—design and technology, mathematics and art—"that produce YouTube and Google," says Thomas Friedman, the best-selling author of *The World Is Flat.*





Becoming smarter about new sources of information. In an age of overflowing information and proliferating media, kids need to rapidly process what's coming at them and distinguish between what's reliable and what isn't. "It's important that students know how to manage it, interpret it, validate it, and how to act on it," says Dell executive Karen Bruett, who serves on the board of the Partnership for 21st Century Skills, a group of corporate and education leaders focused on upgrading American education.

Developing good people skills. EQ, or emotional intelligence, is as important as IQ for success in today's workplace. "Most innovations today involve large teams of people," says former Lockheed Martin CEO Norman Augustine. "We have to emphasize communication skills, the ability to work in teams and with people from different cultures."

Can our public schools, originally designed to educate workers for agrarian life and industrial-age factories, make the necessary shifts? The skills commission will argue that it's possible only if we add new depth and rigor to our curriculum and standardized exams, redeploy the dollars we spend on education, reshape the teaching force and reorganize who runs the schools. But without waiting for such a revolution, enterprising administrators around the country have begun to update their schools, often with ideas and support from local businesses. The state of Michigan, conceding that it can no longer count on the ailing auto industry to absorb its poorly educated and low-skilled workers, is retooling its high schools, instituting what are among the most rigorous graduation requirements in the nation. Elsewhere, organizations like the Bill and Melinda Gates Foundation, the Carnegie Foundation for the Advancement of Teaching and the Asia Society are pouring money and expertise into model programs to show the way.

What It Means to Be a Global Student

Quick! How many ways can you combine nickels, dimes and pennies to get 20¢? That's the challenge for students in a second-grade math class at Seattle's John Stanford International School, and hands are flying up with answers. The students sit at tables of four manipulating play money. One boy shouts "10 plus 10"; a girl offers "10 plus 5 plus 5," only it sounds like this: "*Ju, tasu, go, tasu, go.*" Down the hall, third-graders are learning to interpret charts and graphs showing how many hours of sleep people need at different ages. "*¿Cuantas*

horas duerme un bebé?" asks the teacher Sabrina Storlie.

This public elementary school has taken the idea of global education and run with it. All students take some classes in either Japanese or Spanish. Other subjects are taught in English, but the content has an international flavor. The school pulls its 393 students from the surrounding highly diverse neighborhood and by lottery from other parts of the city. Generally, its scores on state tests are at or above average, although those exams barely scratch the surface of what Stanford students learn.

Before opening the school seven years ago, principal Karen Kodama surveyed 1,500 business leaders on which languages to teach (plans for Mandarin were dropped for lack of classroom space) and which skills and disciplines. "No. 1 was technology," she recalls. Even first-graders at Stanford begin to use PowerPoint and Internet tools. "Exposure to world cultures was also an important trait cited by the executives," says Kodama, so that instead of circling back to the Pilgrims and Indians every autumn, children at Stanford do social-studies units on Asia, Africa, Australia, Mexico and South America. Students actively apply the lessons in foreign language and culture by videoconferencing with sister schools in Japan, Africa and Mexico, by exchanging messages, gifts and joining in charity projects.

Stanford International shows what's possible for a public elementary school, although it has the rare advantage of support from corporations like Nintendo and Starbucks, which contribute to its $1.7 million-a-year budget. Still, dozens of U.S. school districts have found ways to orient some of their students toward the global economy. Many have opened schools that offer the international baccalaureate (I.B.) program, a rigorous, off-the-shelf curriculum recognized by universities around the world and first introduced in 1968—well before globalization became a buzzword.

To earn an I.B. diploma, students must prove written and spoken proficiency in a second language, write a 4,000-word college-level research paper, complete a real-world service project and pass rigorous oral and written subject exams. Courses offer an international perspective, so even a lesson on the American Revolution will interweave sources from Britain and France with views from the Founding Fathers. "We try to build something we call international mindedness," says Jeffrey Beard, director general of the International Baccalaureate Organization in Geneva, Switzerland. "These are students who can grasp issues across national borders. They have an understanding of nuances and complexity and a balanced approach to problem solving." Despite stringent certification requirements, I.B. schools are growing in the U.S.—from about 350 in 2000 to 682 today. The U.S. Department of Education has a pilot effort to bring the program to more low-income students.

Real Knowledge in the Google Era

Learn the names of all the rivers in South America. That was the assignment given to Deborah Stipek's daughter Meredith in school, and her mom, who's dean of the Stanford University School of Education, was not impressed. "That's silly," Stipek told her daughter. "Tell your teacher that if you need to know anything besides the Amazon, you can look it up on Google." Any number of old-school assignments—memorizing the battles of the Civil War or the periodic table of the elements—now seem faintly absurd. That kind of information, which is poorly retained unless you routinely use it, is available at a keystroke. Still, few would argue that an American child shouldn't learn the causes of the Civil War or understand how the periodic table reflects the atomic structure and properties of the elements. As school critic E.D. Hirsch Jr. points out in his book, *The Knowledge Deficit*, kids need a substantial fund of information just to make sense of reading materials beyond the grade-school level. Without mastering the fundamental building blocks of math, science or history, complex concepts are impossible.

Many analysts believe that to achieve the right balance between such core knowledge and what educators call "portable skills"—critical thinking, making connections between ideas and knowing how to keep on learning—the U.S. curriculum needs to become more like that of Singapore, Belgium and Sweden, whose students outperform American students on math and science tests. Classes in these countries dwell on key concepts that are taught in depth and in careful sequence, as opposed to a succession of forgettable details so often served in U.S. classrooms. Textbooks and tests support this approach. "Countries from Germany to Singapore have extremely small textbooks that focus on the most powerful and generative ideas," says Roy Pea, co-director of the Stanford Center for Innovations in Learning. These might be the key theorems in math, the laws of thermodynamics in science or the relationship between supply and demand in economics. America's bloated textbooks, by contrast, tend to gallop through a mind-numbing stream of topics and subtopics in an attempt to address a vast range of state standards.

IN THIS MEDIA-DRENCHED ERA OF BLOGS AND PODCASTS, GOOGLE SEARCHES AND INSTANT MESSAGES, YOUNG PEOPLE NEED TO ACQUIRE A NEW SET OF LITERACY SKILLS THAT ALLOWS THEM TO LOCATE INFORMATION, SORT THROUGH IT QUICKLY AND, MOST IMPORTANT, DETERMINE WHICH SOURCES ARE RELIABLE AND WHICH ONES AREN'T

Depth over breadth and the ability to leap across disciplines are exactly what teachers aim for at the Henry Ford Academy, a public charter school in Dearborn, Mich. This fall, 10th-graders in Charles Dershimer's science class began a project that combines concepts from earth science, chemistry, business and design. After reading about Nike's efforts to develop a more environmentally friendly sneaker, students had to choose a consumer product, analyze and explain its environmental impact and then develop a plan for re-engineering it to reduce pollution costs without sacrificing its commercial appeal. Says Dershimer: "It's a challenge for them and for me."

A New Kind of Literacy

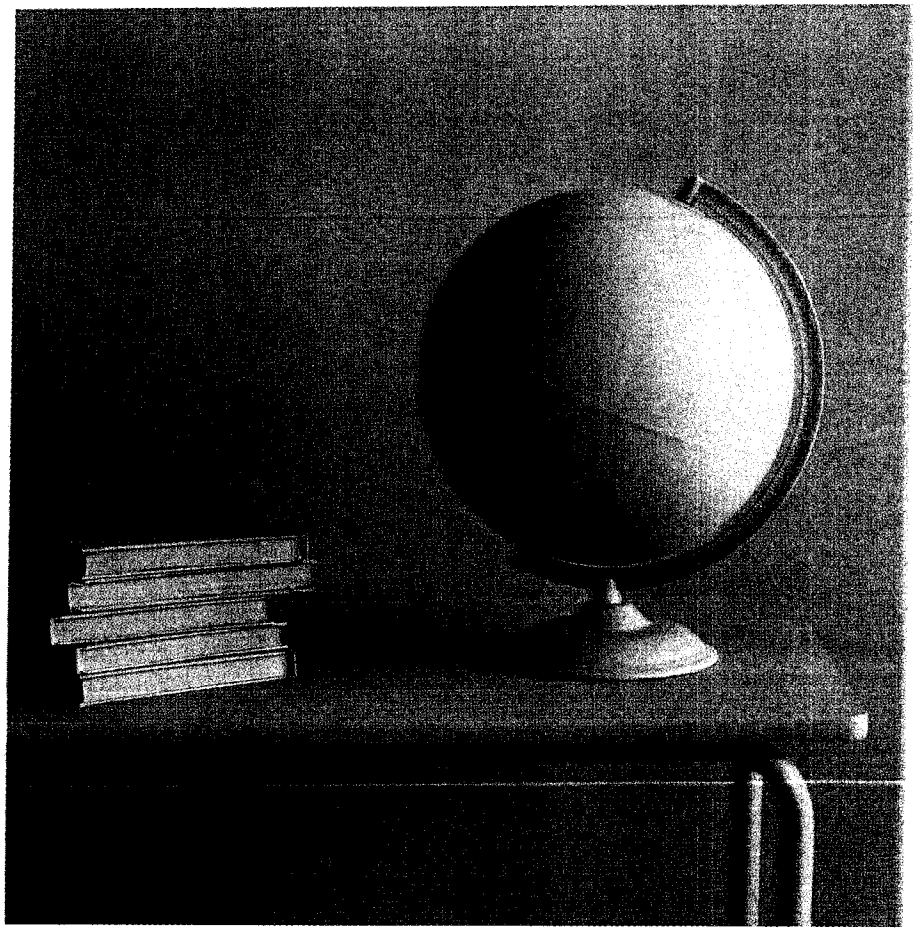
The juniors in Bill Stroud's class are riveted by a documentary called *Loose Change* unspooling on a small TV screen at the Baccalaureate School for Global Education, in urban Astoria, N.Y. The film uses 9/11 footage and interviews with building engineers and Twin Towers survivors to make an oddly compelling if paranoid case that interior explosions unrelated to the impact of the airplanes brought down the World Trade Center on that fateful day. Afterward, the students—an ethnic mix of New Yorkers with their own 9/11 memories—dive into a discussion about the elusive nature of truth.

Raya Harris finds the video more convincing than the official version of the facts. Marisa Reichel objects. "Because of a movie, you are going to change your beliefs?" she demands. "Just because people heard explosions doesn't mean there were explosions. You can say you feel the room spinning, but it isn't." This kind of discussion about what we know and how we know it is typical of a theory of knowledge class, a required element for an international-baccalaureate diploma. Stroud has posed this question to his class on the blackboard: "If truth is difficult to prove in history, does it follow that all versions are equally acceptable?"

Throughout the year, the class will examine news reports, websites, propaganda, history books, blogs, even pop songs. The goal is to teach kids to be discerning consumers of information and to research, formulate and defend their own views, says Stroud, who is founder and principal of the

four-year-old public school, which is located in a repurposed handbag factory.

Classes like this, which teach key aspects of information literacy, remain rare in public education, but more and more universities and employers say they are needed as the world grows ever more deluged with information of variable quality. Last year, in response to demand from colleges, the Educational Testing Service unveiled a new, computer-based exam designed to measure information-and-communication-technology literacy. A pilot study of the test with 6,200 high school seniors and college freshmen found that only half could correctly judge the objectivity of a website. "Kids tend to go to Google and cut and paste a research report together," says Terry Egan, who led the team that developed the new test. "We kind of assumed this generation was so comfortable with technology that they know how to use it for research and deeper thinking," says Egan. "But if they're not taught these skills, they don't necessarily pick them up."



Learning 2.0

The chairman of Sun Microsystems was up against one of the most vexing challenges of modern life: a third-grade science project. Scott McNealy had spent hours searching the Web for a lively explanation of electricity that his son could understand. "Finally I found a very nice, animated, educational website showing electrons zooming around and tests after each section. We did this for about an hour and a half and had a ball—a great father-son moment of learning. All of a sudden we ran out of runway because it was a site to help welders, and it then got into welding." For McNealy the experience, three years ago, provided one of life's *aha!* moments: "It made me wonder why there isn't a website where I can just go and have anything I want to learn, K to 12, online, browser based and free."

His solution: draw on the Wikipedia model to create a collection of online courses that can be updated, improved, vetted and built upon by innovative teachers, who, he notes, "are always developing new materials and methods of instruction because they aren't happy with what they have." And who better to create such a site than McNealy, whose company has led the way in designing open-source computer software? He quickly raised some money, created a nonprofit and—*voilà!*—Curriki.org made its debut January 2006, and has been growing fast. Some 450 courses are in the works, and about 3,000 people have joined as members. McNealy reports that a teenager in Kuwait has already completed the introductory physics and calculus classes in 18 days.

Curriki, however, isn't meant to replace going to school but to supplement it and offer courses that may not be available locally. It aims to give teachers classroom-tested content materials and assessments that are livelier and more current and multimedia-based than printed textbooks. Ultimately, it could take the Web 2.0 revolution to school, closing that yawning gap between how kids learn at school and how they do everything else. Educators around the country and overseas are already discussing ways to certify Curriki's online course work for credit.

Some states are creating their own online courses. "In the 21st century, the ability to be a lifelong learner will, for many people, be dependent on their ability to access and benefit from online learning," says Michael Flanagan, Michigan's superintendent of public instruction, which is why Michigan's new high school graduation requirements, which roll out next year, include completing at least one course online.

A Dose of Reality

Teachers need not fear that they will be made obsolete. They will, however, feel increasing pressure to bring their methods—along with the curriculum—into line with the way the modern world works. That means putting a greater emphasis on teaching kids to collaborate and solve problems in small groups and apply what they've learned in the real world. Besides, research shows that kids learn better that way than with the old chalk-and-talk approach.

At suburban Farmington High in Michigan, the engineering-technology department functions like an engineering firm, with teachers as project managers, a Ford Motor Co. engineer as a consultant and students working in teams. The principles of calculus, physics, chemistry and engineering are taught through activities that fill the hallways with a cacophony of nailing, sawing and chattering. The result: the kids learn to apply academic principles to the real world, think strategically and solve problems.

Such lessons also teach students to show respect for others as well as to be punctual, responsible and work well in teams. Those skills were badly missing in recently hired high school graduates, according to a survey of over 400 human-resource professionals conducted by the Partnership for 21st Century Skills. "Kids don't know how to shake your hand at graduation," says Rudolph Crew, superintendent of the Miami-Dade school system. Deportment, he notes, used to be on the report card. Some of the nation's more forward-thinking schools are bringing it back. It's one part of 21st century education that sleepy old Rip would recognize.

—With reporting by Carolina A. Miranda