Hop, Skip ... and Software?

by Victoria Irwin

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1   Jody Spanglet's seventh- and eighth-grade students at Charlottesville Waldorf School in Virginia are studying revolutions. They dissect the Declaration of Independence, delve into the French rebellion against Louis XIV, and read about the various inventors who sparked the Industrial Revolution. But this study happens to be profoundly counterrevolutionary in today's cyber age: Not a single classroom in the school—from kindergarten through eighth grade—contains a computer.

     Contrast that with the B.F. Yancey Elementary School in the southwest corner of the same county, Albemarle, in central Virginia. Here, computers are considered a rich resource and are used everywhere, from kindergarten through fifth grade. Third-graders working on oral history projects, for example, must first pass an online minicourse. They can then take home digital video cameras and download their oral history interviews onto the school computers, which are later made available on the school's website.

     While the computerless Waldorf school is an exception in a nation that tends to embrace the technology revolution, both schools find themselves on the cutting edge of a debate about if and how computers should be introduced to children at the elementary-school level. At one end of the spectrum are coalitions such as the Alliance for Childhood, which has called for a moratorium on computers for students in early childhood and elementary schools. Concerns range from health issues to the need for stronger bonds between children and adults and more hands-on, active play in learning. At the other end are educators and technology enthusiasts, who believe that the use of computers at an early age—even when led by an adult—can open a child's mind to ideas and concepts that will kindle a great desire for learning, and perhaps make a child "smarter." Parents and guardians stand somewhere in the middle.

     Many parents, who brag that their not-yet-3-year-old can type his or her name on a keyboard to enter a computer game, also admit to a grudging guilt that they did not instead send that same toddler outdoors to explore the wonders of blooming crocuses peeking through a layer of snow. "I don't think an elementary school virtually devoid of technology is necessarily bad," says Gene Maeroff, a professor at Columbia University's Teachers College and the author of "A Classroom of One: How Online Learning Is Changing Our Schools and Colleges." "Nor do I think a school loaded with technology is necessarily good, or better, at meeting students' needs," he says. "Computers can enhance

education. But those possibilities become greater as kids get older, particularly at the secondary level, and absolutely at the college or postgraduate level."

Various studies show different effects of computer use in the classroom. In the late 1990s, the Educational Testing Service found that middle school students with well-trained teachers who used computers for "simulations and applications" in math class outperformed students on standardized tests who had not used them for that purpose. Meanwhile, eighth graders whose teachers used computers primarily for "drill and practice" performed even worse.

Born Digital

Computer technology is a fact of life in U.S. schools and homes. In the fall of 2000, 98 percent of public schools had access to the Internet in their schools, up from 35 percent six years earlier. And one in five students in public schools overall had access to a computer. In urban schools, that number drops to one in nine—which one technology advocate calls "not a digital divide, but a digital chasm." Today, according to the National Center for Educational Statistics, 80 percent of eighth-graders have access to a computer at home. Despite tightened state budgets, efforts are under way throughout the country to make technology even more relevant to students and learning. In Maine, every single seventh-grader (of whom there are slightly more than 18,000) has a laptop computer. In April, the state will begin sending computers to all eighth-graders, too. At Walton Middle School in Charlottesville, Va., seventh-graders are using what some predict will be the educational technology of the future—handheld computers—to facilitate writing.

But how computers are used varies greatly. Elliot Soloway, of the University of Michigan's Center for Highly Interactive Computing in Education, surveyed 4,000 schools last year and found that 65 percent of students in public schools, including high schools, spend less than 15 minutes a week using computers to access the Internet. PC Magazine reports that, of the $5 billion spent in the past decade to get computers into schools, 17 percent was used to educate teachers how to use the computers and integrate them into the curriculum. That gets to the heart of a debate over whether computer use in school is beneficial to students—or merely expensive window dressing.

Quality teachers have always worked toward finding many different paths to build basic knowledge and skills that students will need to succeed in school and life, says Becky Fisher, assistant director of the Department of Technology for the Albemarle County Schools. "Adding technology to the mix only makes a great teacher even better," she says. "The issue is not whether technology is appropriate for students—most kindergartners have already mastered more

technology than existed when I was a child. Rather, it is whether our teachers are supported in a way to maximize the benefits of technology."

The Human Connection

Those who think technology in the classroom should wait see technology differently. "We strongly believe that actual experience is vital for young children," says Jody Spanglet of the Waldorf School in Charlottesville. "It is important for students to interact with one another, with teachers, and with the world—to explore ideas, participate in the creative process, and develop their knowledge, skills, abilities, and inner qualities." Nancy Regan, an administrator at the school, says: "A computer is a mediated experience. You touch the keyboard, but what happens online is not your doing. Our whole curriculum is based on human connection."

It is not that the Waldorf School eschews technology. For example, it has a website. And Ms. Regan says computers at the high school level are a good idea. Her seventh- and eighth-graders will soon be doing a report on inventors from the Industrial Revolution. To do so, they are required to use at least three resources, one of which can be the Internet. Kim McCormick, who has two daughters, ages 5 and 8, at the Charlottesville Waldorf School, says her family is not the least bit uncomfortable that their children's classrooms have no instructional computers. "We want them to get to know the world on a firsthand basis," says Ms. McCormick, a public school teacher. Her husband is a computer program analyst. "They see us using computers for work. But we don't have any kids' things on our computer. I have looked up butterflies for them before, so they know it can be a tool and resource. But they will learn to use a computer so quickly later. My husband, who works with computers for a living, didn't learn those skills until after college."
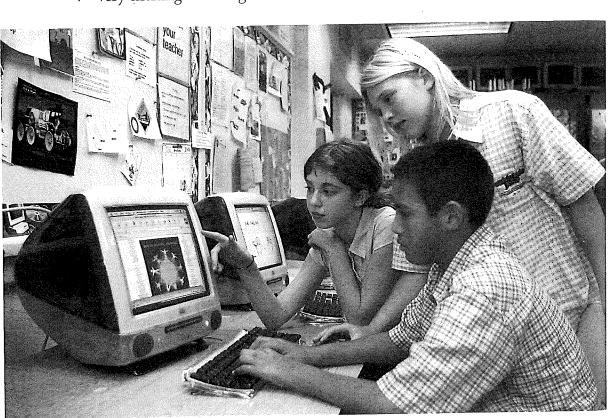
Going Online, Bit By Bit

Technology enthusiasts say computers should be introduced in stages. Paula White is a resource teacher for gifted students who helps integrate technology into the classroom at Yancey. White says that, at Yancey, while even kindergartners are using computers in the classroom—to count candy hearts on Valentine's Day, for instance—the teacher is the one entering the information. It is not as though children at Yancey are being plunked in front of a machine without interacting with teachers. But at some schools, lack of interaction is a real concern. A mother of three children in another Virginia elementary school says she is disappointed in the use of computers in two of her children's classes.

When they get computer time, it is usually in the morning or late afternoon, she says, when a teacher wants to grab some extra time at his or her desk.

Bette Manchester of the Maine Learning Technology Initiative, which oversees the state's laptop project, says even the best teachers have a hard time incorporating the four or five desk computers that often sit in elementary classrooms. One-to-one computer access changes everything. "We've made this crystal clear: This is not about technology or software, it is about teaching kids," Ms. Manchester says. The success of the Maine program, she notes, depends heavily on leadership among teachers in the state, as well as the complete integration of laptops into every school's curriculum. Training involves teacher staff, students, and parents, and started well before the computers arrived. Manchester says middle school is a great time to give students intimate access the technology. "They are at a critical stage developmentally," she says. "These kids are learning how to learn, not simply reading to learn anymore. It's been very exciting watching them take off."