

## Technology in Schools: Some Say It Doesn't Compute!

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Education World®

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*Technology changes faster than educational researchers can study it. Although many researchers insist computers are valuable in schools, they readily admit they can't yet say whether technology actually helps kids achieve educational goals. Have schools jumped onto the technology bandwagon too soon? In this story, Education World focuses on some of the research that makes a strong case against the way technology is currently used in schools.*

"If you have all the computers hooked up to only one server, then they are very slow," Erin, a 14-year-old middle-school student, told Education World. "We had to go on the Internet for class one time, and it took three to five minutes just to get to Yahoo [the search engine]. We had only 45 minutes in the lab, and with all the wait time, most of us accomplished very little. I felt like that class was totally wasted. When schools buy computers, couldn't they also invest in more or quicker servers? Isn't my time valuable too?"

Educational psychologist and longtime teacher and administrator Jane M. Healy, once an advocate of technology in the schools, sees many problems with the way educational technology is used today. "It's become an idea that has taken over the public consciousness, helped, of course, by the mass promoting of these products to kids as young as a year-and-a-half." (See "Once a Champion of Classroom Computers, Psychologist Now Sees Failure," New York Times, September 16, 1998.)

### THE HIDDEN PRICE OF TECHNOLOGY IN THE SCHOOLS

Ms. Healy has many concerns. Along with Erin's situation, she worries about

- \* the possibilities for visual and postural problems and repetitive-motion injuries, such as carpal tunnel syndrome;
- \* the potential danger of emissions from the backs or sides of older machines;
- \* the consequences of many children, including preschoolers, being sedentary instead of active and spending considerable chunks of time interacting not with peers but with computers instead of developing their motor and social skills;
- \* schools using software that, although fun, might be of dubious educational value and not necessarily relevant to the curriculum;
- \* children's expectation that learning must be entertaining and their failure to use all their senses or to become active learners;
- \* the frustration caused by frequent computer breakdowns and inadequate technical support.

In an October 1998 Education Week commentary, The 'Meme' That Ate Childhood, Healy cited an experiment that compared young children's math learning from board games played on computers with the same games played by a child with an adult. The study found that because of the language interaction, a child's one-on-one contact with an adult produced far greater gains than those achieved when played on a computer.

"Most available research," Healy adds, "has been commissioned by industry interest, and the sparse objective evidence indicates that computers have thus far contributed nothing of note to the learning process.... There is no question that computers are 'motivating' to children -- but are they motivated to learn or just to play with the computer?"

"Take note," Healy concludes, "several responsible educators I interviewed deem up to 85 percent of current software not only 'worthless' but possibly damaging. For example, one study of children using a popular reading-readiness program showed a 50-percent drop in their creativity scores." Since developing educational software does not pay that well, top software developers tend to go into other areas, not education. (See "Tots at the Computer: Educators Debate Value of Use at Young Age," Christian Science Monitor, February 2, 1995.)

#### ADDITIONAL RESEARCH ABOUT THE CORRELATION BETWEEN TECHNOLOGY AND RESEARCH

According to a USA Today story, Do Classroom PCs Help Kids Learn? (8/03/98), "the Third International Math and Science Study found that the five countries that outperformed U.S. fourth-graders in math did not use computers in their schools very often (one-third as often as we do), and fourth graders in five other nations who had more home computers than our children did not do better in science than did our students. The study found no correlation between computer use and math or science achievement.

Christopher Columbus Middle School in Union City, New Jersey, is a school praised by President Clinton as having dramatically raised its test scores through technology use. Scrutiny, however, revealed that the test scores actually rose before the school installed computers. (See "Hype vs. Hope in Union City, New Jersey," Technology & Learning, December 1998.)

Stephen Krashen, a professor of education at the University of Southern California, investigated several of the studies that indicated working with computers improved student achievement. He found several of those studies had serious structural discrepancies. Some made claims but provided no supporting data, and others, curiously, were not available for public inspection. (See "Conflicting Claims Concerning Computers: A Comment on Hinkson (1996)," The California Reader, winter 1997.) Recently the Educational Testing Service reported that students who spent more time on computers in school actually

performed slightly worse than those who spent less time on them. (See Does It Compute? The Relationship Between Educational Technology and Student Achievement in Mathematics.) Eighth-graders who used computers primarily for "drill and practice" scored more than half a grade lower than students who did not use them in that way, and drill software had little impact on the performance of fourth-grade students.

#### THE INTERNET AND ACADEMIC ACHIEVEMENT

After randomly interviewing 6,000 U.S. educators, Market Data Retrieval found that because the material is unorganized and not directly related to curricula or textbooks, more than 86 percent of the educators polled believe Internet use by children in grades 3 to 12 does not improve their academic achievement. (See "Net Day: Questioning The Impact of Computers in the Classroom," Daily Report Card, October 27, 1997.)

In a Boston Globe article, Jonathan Zittrain, a Harvard Law School professor, said he found much of the material on the Internet to be incorrect or biased. Material that is not edited or reviewed by peers before it is printed is frequently of questionable reliability, he adds. (See "Net-Savvy Students Shelving Libraries," Boston Globe, March 1, 1999.)

Lowell Monke, an advanced computer technology teacher in Des Moines, Iowa, found that when it comes to the Internet, "the connections are often unreliable, the interfaces unintuitive, the documentation unintelligible, the information unfindable. And when we do get the systems working, the technology changes so fast that we never feel fully confident about what we are doing." Students may be able to find information on the Web, but "just don't ask them to explain what they found when they arrived.... [A]s social critic Theodore Roszak said, 'An excess of information may actually crowd out ideas, leaving the mind (young minds especially) distracted by sterile, disconnected facts, lost among the shapeless heaps of data.' ...[R]esponsibility demands that when we consider using computer technology, we think about what will be lost as much as we think about what will be gained." (See The Web & The Plow, Teacher magazine feature, October 1997.)

Edward Rothstein of The New York Times believes "the Internet will not come close to replacing even the most ordinary library until every book of importance is published in digital form, financial arrangements are worked out with publishers, and search engines become as powerful as the index in back of a reference book. Right now, even the most limited local library has much the Internet cannot touch." The lowest national estimate is that it will cost at least \$10 billion a year for at least five years to guarantee U.S. school children access to the Internet. Could cutting funding for programs and school supplies to make room for computers be educational malpractice? (See "Gates's Largesse Stirs a

Discomforting Question: Is There Indeed a Computer Literacy?" New York Times, July 7, 1997.)

#### EDUCATIONAL MALPRACTICE?

"In social studies we do not use the social studies books, because they're from the 1980s and they are falling apart," Justin, a 14-year-old student, told Education World. "Our school chose to spend money that they could have used to upgrade our social studies books to buy computers. Almost everyone in the school has used them only once, but we would use our books every day."

With little evidence that technology as it is used today actually improves student learning, should schools strapped for funds put so much of their limited resources into something so expensive to buy and maintain? Every new technology with the potential to bring benefits carries a price. Think of 14-year-old Justin. In his case, is it worth the price?

#### ONLINE RESOURCES QUESTION THE VALUE OF TECHNOLOGY

\* The 'Meme' That Ate Childhood This Education Week article references studies that have found many problems with much of the educational software available.

\* Do Classroom PCs Help Kids Learn? An August 1998 USA Today article includes research for the Third International Math and Science Study (TIMSS) and the CEO Forum on Education that found only 3 percent of schools currently optimize classroom technology.

\* Does It Compute? The Relationship Between Educational Technology and Student Achievement in Mathematics The results from this study (reported by the Educational Testing Service) suggest that technology can help math academic achievement, depending on how it is used and how well the teachers using the technology are trained. The study found that technology affects fourth-graders less than eighth-graders and suggests focusing technology on middle rather than elementary schools.

\* The Web & The Plow In this October 1997 Teacher magazine article, Lowell Monke, an advanced computer technology teacher in Des Moines, Iowa, discusses some of the problems he sees in how the Web is used today.

#### OTHER RESOURCES USED TO RESEARCH THIS STORY

\* "Hype vs. Hope in Union City, New Jersey," Technology & Learning, December 1998.

\* "Once a Champion of Classroom Computers, Psychologist Now Sees Failure," New York Times, September 16, 1998.

\* "Conflicting Claims Concerning Computers: A Comment on Hinkson (1996)," by Stephen Krashen, The California Reader, winter 1997.

- \* "Net Day: Questioning The Impact of Computers in the Classroom," Daily Report Card, October 27, 1997
- \* "Gates's Largesse Stirs a Discomforting Question: Is There Indeed a Computer Literacy?," by Edward Rothstein, New York Times, July 7, 1997.
- \* "Tots at the Computer: Educators Debate Value of Use at Young Age," Christian Science Monitor, February 2, 1995.
- \* "Net-Savvy Students Shelving Libraries," Boston Globe, March 1, 1999.

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