

# Computers in the Classroom — Where's the Beef?

By Steve Talbott

*(Arthur Zajonc remembers programming a PDP-8 by manually setting registers to instruct the machine to read a paper tape. He has lived with computers ever since. An internationally-reputed quantum physicist, professor at Amherst college and enthusiast for Waldorf education, he gave the concluding talk at a Columbia University conference. This article recaps part of his speech.)*

In his recent talk, Professor Arthur Zajonc assessed the current place of the computer in education. Here are some of his observations.

*"The Hertzian waves will carry education as they do music to the backwoods, isolated farms and into the mountains of Tennessee, Kentucky and West Virginia. The limitations of 'the little red schoolhouse will pass away; the country schoolteachers will be reinforced by college professors and other specialists. Radio will be an institution of learning as well as a medium for entertainment and communication." 1923*

- Sylvia Charp's 30-year history of computers (*Technological horizons in Education, Vol. 24, no. 11, pp. 8ff*) is a history of continuous failure and new attempts — this despite Charp's own optimism.
- Drill-and-test with a computer proves somewhat more effective than drill-and-test without the computer. But this is not a use of technology that many educational specialists are excited about.
- The grand visions of an education radically transformed by the computer have proven inconclusive at best. Apple's "classrooms of tomorrow" still have not arrived, and Seymour Papert's LOGO "has disappeared from the landscape."

- According to a 1997 Educational Testing Service report, playing games is the most frequent use of computers among fourth and eighth graders. College-bound high school students are familiar with word processors, spreadsheets and graphing, but their understanding of what goes on "under the hood" — necessary for high-end uses of the computer — is actually declining.
- There is widespread acknowledgment in recent reports that (as *Education Week* put it) while "unprecedented support for school technology is spurring an investment of billions of dollars, a lack of research and a dearth of data mean the payoff is unclear."

*"While children may be bored and restless when merely listening to a speaker [on radio] without seeing him, living talent or motion pictures broadcast at a certain time to all schools in a given area will capture and hold their interest." 1941*

- A report from the President's Panel on Educational Technology estimates that \$3.5 to 4 billion was spent nationally on computing technology during the 1995-96 school year. That's about \$90 for every school child. Projections for the next several years vary, but average about \$15 billion per year.

Given the uncertain educational gains from computers, Zajonc asks, "Do you really have the right to spend that kind of money?" The question becomes all the more urgent when you realize that "we've been jettisoning music, theatre, art and foreign languages from the curriculum."

Zajonc grants that "every student should learn how to use the Internet's resources, just as he or she uses the local library. But this is not the revolution touted for the last three decades."

Noting that he has never found a non-trivial use for computers before the sixth or seventh grade, Zajonc believes older students can profitably resort to the Net for information retrieval (which, if the information is to have much value, will cost considerably) and for e-mail. Crucially, they should also learn about the technology itself, so that it is demystified for them.

Finally, in an interview following the conference, Zajonc was asked by *CyberTimes* reporter, Pamela Mendels, about the Internet learning game "Where in the World is Cynthia San Francisco?" The game, a mystery whose clues consist of meteorological data, is designed to get kids learning about weather. Zajonc emphasized how important it is to cultivate chil-

*"You can't expect a passive medium like television to contribute much to the education of viewers. But with the advent of interactive computer networks, education will be revolutionized. The child's imagination will finally be set free to roam the world, guided by his own interests." 1997*

dren's curiosity about their immediate environment. When his own children were young, he said, they could get excited about observing a sunset, say, or the moon. "I think children, if given the opportunity to attend to small things, to quiet sounds, gentle wind, will do so. And that leads to a refinement of their senses, as opposed to a coarsening of them."

*(Mr. Talbott is editor of the NETFUTURE newsletter. To subscribe, send the message, "subscribe netfuture yourfirstname yourlastname" (without the quotes) to listserv@info serv.nic-bnc.ca. NETFUTURE is also available on the web at [www.ora.com/people/staff/stevet/netfuture/](http://www.ora.com/people/staff/stevet/netfuture/).)*