Computers and schools

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In an elementary school in a small Idaho town in 1969 a ten-year-old boy suggested the use of a computer to answer a difficult historical question: What was the major cause of the American Civil War? The boy proposed "to put all that we know" about the Civil War into a computer, and let the computer produce a probability ranking of the data as to cause and effect relationships. Computers were practically unheard of in schools at the time.

This writer was working at the time as a curriculum and instructional specialist in Idaho Public Schools, and had been asked by a fifth grade teacher for advice on how to improve her social studies program. Social studies in fifth grade was and is American History, and when that Idaho teacher asked for help she was then teaching about the Civil War. Children were bored, she said.

"Inductive thinking" was sweeping the United States at the time, as the central thrust of NEW SOCIAL STUDIES, NEW MATHEMATICS, NEW ENGLISH and NEW SCIENCE curriculum programs. Children were to engage in problem solving, thinking, not just memorizing. Consequently, boredom would be greatly reduced it was believed.

I had talked with the children. "What was the most important thing they had learned about the Civil War?" They believed, it was why the Civil War had occurred. There were five textbook reasons as to why. We wrote the reasons on the blackboard and discussed them for some time. Then the question arose, "Which of the five causes was the most important?" The children were silent momentarily before claiming not to have learned the answer to that question yet. They agreed, however, the question was a good one. The teacher hastened to say the answer had not been in the book, nor did she know what it might be.

But the children were extremely interested in the question. Discussion followed. Another question occurred, "How could the first question be settled? How could the most important cause be determined?" The children became very quiet and thoughtful.

A boy began to speak. "I know how to answer it! You get a computer. You put into the computer everything that's known about the Civil War. You ask the computer the question, "If a given event hadn't happened, would there have been a Civil War? You do that with each event until the computer tells you which is the cause."

What a surprising suggestion from a ten-year-old boy in an Idaho farming community in 1969! Could a computer resolve such an historical question? Was "truth" about the past so easily to be found?

To make social studies more interesting, it would be worth trying the boy's suggestion. Would he like to try using a computer to answer the question? Would other children want to do the same? It appeared so.
I said to the teacher that such a project as the boy suggested would be a great way to improve her social studies program for the time being. Actually, not only would it be good social studies, it would be good science as well. And mathematics. And language arts. Let the children get many books on American History out of libraries such as city and high school. Let them learn to program a computer with historical data. A computer could become a tool for the study of history in an elementary school in 1969. A few years later such a project was undertaken by a university doctoral student in the Eastern United States.

In 1969 there was much optimism about the use of technology in education. Buckminster Fuller had said, in 1965, "Computers as learning tools can take over much of the 'educational metabolics,' freeing us to really put our brains and wisdom to work. A recent report by the President's Science Advisory Committee recommends that the government underwrite a program to give every college student in America access to a computer by 1971. I suggest that we give every preschooler access first!" The latter recommendation was later put forward also by Seymour Papert. He said that every kindergarten child should be issued a computer as he was then issued a pencil. The computer would be the new pencil.²

George Leonard, who in 1968 was referred to as "...the nation's most honored education writer..." outlined a then possible school which utilized new technology, including computers, in his widely read book, Education and Ecstasy.

John Rouse, however, warned about the misuse of technology. The temptation according to Rouse would be to use technology to do traditional educational things, mainly to stuff children with mostly useless information and facts, rather than to foster thinking. He said in 1968, "...the most significant development in education has been the triumph of the oldest schoolroom method of all—the lecture method. Programmed textbooks, televised lessons and team teaching are just ways of lecturing students."³ Had he been asked to comment on the future of computers, he undoubtedly would not have been optimistic.

Papert has given just such a warning regarding computers. Rather than children learning to program computers and control computers, as Papert believed was the proper place in education for computers, computers were being used to program and control the children.

As in the sixties, optimistic statements are being made about the educational potential of technology and more especially, computers. Lewis J. Perelman, in his book, School's Out goes so far as to announce, "The end of education" as we know it and the arrival of "hyperlearning."⁴

A Better Homes and Gardens magazine article of April, 1993, titled "Space-Age Schools: Techno Wonders are Changing the Way Our Children Learn," said, "Today's curious students have the world at their fingertips. More and more schools are taking advantage of fast-moving advances in technology to equip their classrooms with powerful high-tech computers. Some of these modern teaching tools are even wired into global libraries of information that offer the students the chance to hold two-way teleconferences with schools and universities around the world."⁵

Currently computers are widely available in public schools, especially in high school business departments. High school business classes have largely given way to computers from
the archaic typewriters and their successors, word processors. There will be some word processors here and there, though often they will be gathering dust in the back corner of a classroom, or elsewhere. I recently saw a dozen or so bunched together on a counter along one side of a classroom.

Even though computers are widely available, they are rarely the latest models. Up-to-dateness is a constant problem and has serious implications for the relevancy of computer literacy skills.®

During the past five years this writer has visited and observed in many high school business classrooms where computers are plentiful and where there is much to-do about "desktop publishing," "WordPerfect" and of course "keyboarding." Are computers in and under these circumstances fulfilling their promise and potential? No. They are not. Teachers largely proceed with typically traditional "lessons." Students see themselves fulfilling traditional course requirements, that once done can be forgotten and thrown away just as they do in so many of the other "academic" classes. The students who don't have a computer at home find little appeal in the computer except when they are permitted to play some computer games as a reward for work accomplished or good behavior. Well, there is some additional appeal: "hands-on" activities and the inherent individualization are appealing. Students who don't have computers at home nevertheless have often had a lot of experience with video and Nintendo games at an arcade. Many also have played computer games at a neighbor's or relative's house.

Students who have a computer at home find little to learn at school because they either already know what schools try to teach, or again, don't see the use of the "knowledge" offered. Computer literate students often take such classes because it's an easy grade. Of course all students take such a class in some states because it's been mandated by a state board of education which was given a mandate from a legislature in the name of preparing the student to be computer literate in this computer age. Everyone under such circumstances takes a computer class whether they need it or not. In keyboarding classes there are students with little to learn because of computer literacy acquired elsewhere. In one class a boy was through with the assignment in about five minutes after directions were given. He had also worked on the assignment while directions were being given. For the remainder of the class he did homework for other classes, and there was a lot of class time left because the school classes were an hour and a half long.

On visiting one WordPerfect class, I asked the teacher if she had any students who already knew WordPerfect when the class started. She immediately pointed at two students as being in that category. Asked what she did in such a case, she said she let them use their time as they wished when they had completed the class assignment which they were able to do very quickly. I asked why she had them do the class assignment if they already knew it. She said it was to be fair in grading. It wouldn't fair if some students got good grades and credit without doing the assignments.

At one high school a new teacher showed me the work of many students that was very poor. They made extensive English errors and the students had little interest in correcting them. "They expected good grades for bad work," she said. The high school counseled many
struggling students into business classes as a way of ensuring their graduation. Poor academics lead to placement in vocational type classes.

What is the promise and the potential of computers in public schools, or private schools for that matter? Papert and Rouse and undoubtedly others have said and would say again that computers offer man undreamed of power as an extension of and a tool of the mind as well as the body of man. They would say the schools should be places where children acquire such power of the mind and body.

The project proposed by the ten-year-old Idaho boy back in 1969 is an example of the potential use of computers in schools. Can we expect computers to have such a role in our schools very soon? Probably not. A study reported at Cleveland State University in 1993 says, "... one of the strongest determinants of how extensively and in which ways computers were used was the structure of the school. Another strong influence on educational computing was the staff's occupational culture, their perceptions of the student body, and what constitutes legitimate school knowledge."\(^7\)

Another 1993 report said, "... most computer time has been devoted to teaching students computer skills rather than embedding or applying computer capacity in the context of ongoing teaching and learning in other subjects."\(^8\)

The structure of the school, the culture of the school, what constitutes legitimate school knowledge stand in the way of the promise computers hold for education. There is one hope, "savvy teachers," visionary teachers who rise above the structural, cultural and customary definitions of school knowledge and chart a new course leading to greater utilization of the human mind.

ENDNOTES

1. Fuller on Education, Amherst Press, 1979, p. 94.