

A Computer's Teacher Power

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POWER

Just as steam displaced sails on ships; and the automobile, the horse; and just as TV has, to an unknown degree, replaced wholesale dependence on daily newspapers, among other things, so the computer will continue to change the nature of American life. Of more importance: it can help American education. Already, this technology is in many schools, here and there, even if somewhat haphazardly—too often dependent upon the influence of an individual or business company to one degree or another—whose “baby” it really is. Just as the first railroads built different width tracks so that other trains could not run on them, each computer-related program is moving at its own speed, on its own tracks.

This prompts the question: How will today's teachers—more ignorant about and fearful of the computer than is recognized—be prepared to use the computer's various opportunities that are presently being dreamed of? Many entrepreneurs and investors, some of whom are true visionaries, are hard at work to make the technology the central part of tomorrow's schools, where it will be viewed as basic equipment. It could be the dynamo that serves all teachers, everywhere. There is the possibility that computers, equipped with new and appropriate software, might be able to provide customized, individualized instruction for students—so that each individual can learn at his or her own speed. After all, every student is different—in one or more countless ways. Each and every student has some kind of problem requiring special attention which ultimately only the computer can successfully handle since there will never be as many teachers as there are students.

Who is currently preparing tomorrow's teachers? Higher education, one part of which, teacher education, has the unique role and technical job of developing the appropriate pedagogy for different students and different subjects. The *how* in teaching is essential to learning the *what*—to which all of higher education must now provide courses (as it currently does not) for the preparation of undergraduates to become teachers. All of higher education must be involved in preparing

teachers—its own as well as the nation's school teachers. The future depends upon a new, more professional attack on the job ahead, and at hand. Meanwhile, the teachers who are good, bad, and indifferent—professionals or not—who are currently teaching, will not have the advantage of these new activities for which some provisions must be made. Already on the firing line, efforts should be made to introduce or increase their professional training in how to most effectively use the new technologies to strengthen their teaching.

Tomorrow's planners must not forget that the school population consists of more than teachers and students (despite the fact that instruction is at the heart of the matter). Included are all of the managers—the principals, superintendents, and parents, as well as the school boards, members of the town council, the politicians in the county seat and those in the state legislature, as well as the business people responsible for technological equipment, textbooks, and software. Were new software to replace any single textbook, the reaction of the involved constituencies is unimaginable and should be accounted for in making new plans.

Whether the futurists, the business people, the scholars and teachers, and the others currently involved in bringing the computer into the classroom can or ever will join forces, so that all trains run on the same track (which is essential), is the question. Planners must seriously address this vast and complex group of people. They must influence the entire school population, not just a favorite school or one school district. This, perhaps, is an impossible task; yet, it is fundamental. A vast web of schools has replaced the little red school house, a mixed population which must be engaged, all of which raises the question of centralization—an issue that warrants consideration by the several forces now at work.

Changing traditional teaching by making the computer central to activities in the school is bound to be suspect as, in many cases, it already is. Many of those who are preparing for these changes in education, whether relying on textbooks or software, are always thinking “computer”—hook, line, and sinker—while

others are thinking in terms of the status quo and the more traditional forms of teaching. So, for the futurists who see the computer as tomorrow's dynamo in the country's classrooms, the question is how to convince those teachers who will continue to ask: How can the computer be used in my classroom to meet my goals to reach the students' needs?

Just as testing is said by some to interfere with a teacher's ability to think through the lesson plan—since it can displace a teacher's chain of thought—so, too, can the computer. A good part of teaching is the personal engagement between teacher and student—which offers opportunities for questions, answers, corrections and explanations, even *conversation*. Happily, many teachers have already learned how to accommodate this new technology and to interweave the use of a computer with their own style of teaching. But others might argue that when the personal—the *human element*—is challenged, the teacher loses the chance to drive home whatever subject matter is under discussion. To be able to get the content across is the teacher's goal. So, while substance may be helped by the computer, the need to integrate the computer into the minds of teachers is a central need—which is no simple “PR” effort to consider, for the teacher must be in charge.

Then, there is the issue of pedagogy. Can computers cope with it as easily as it can with substance? Always a difficult subject, it is more so for machines than for teachers. It is, ultimately, the teacher's ability to transfer information/substance to the students that counts. Good pedagogy helps to distinguish good from poor

teaching. But, substance, not pedagogy, is the goal—if the student is going to learn anything. Before it can be expected that three million school teachers can or will teach 60 million students by depending more and more on computers, various psychological and other obstacles must be considered realistically and convincingly, by today's entrepreneurs and visionaries.

After the Civil War, the U.S. Navy found it difficult to switch from sails to steam, so for a period of time, it built warships that used both sails and steam. The admirals continued to debate and eventually gambled on steam, which won out. Today, a similar position exists *vis-à-vis* the computer. The admirals of the school population wonder and worry, while investors seek consensus. Eventually, teachers will learn how to use this new invention just as the Navy did by using steam, and just as a later generation did by putting the horses in the barn and driving automobiles. Someday, a new generation of teachers will steam into this new world of technology where, with the computer, they will still be the vital and stronger agent in charge of teaching. When this occurs, it may well be that for the first time, the country's schools will have qualified teachers in every classroom.

ENDNOTE

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