

Internalization . . . must take place if the innovation is to become part of daily schoolwork.

# Training, Computers, and Educators

by Richard A. Diem

In the past three to five years schools in all parts of this country have invested millions of dollars in a technology that holds untold promise in its ability to deliver information in a palatable, easily manipulable, and nonthreatening mode. So great has the persuasive and enticing manner of this technology been that school administrators, without much experience in the technology or the ramifications of its purchase, have convinced both school boards and the public at large that the use of computers will dramatically change literacy rates and, at the same time, offer students a utilitarian tool they can use when they leave school.

The final results of these dreams are not yet in and probably won't be until this generation reaches maturity. What we do know is that the computer as an interactive instructional tool for school use may not ever reach its potential. Despite the number of states that now mandate computer literacy as a high school graduation requirement, and those that include courses in computer training as a part of teacher pre-professional training, there are signs that nothing has changed in the majority of American classrooms. In a recent article in the *Phi Delta Kappan* (December 1984), Alfred Bork pointed out that "Most learning is still taking place through passive learning modes that have been dominant for hundreds of years: books, lectures." Bork rests most of the fault on poorly designed computer software and the lack of interactive training in computer usage. While these issues need immediate and long-range solutions, a third problem, that of classroom application, bears both scrutiny and study if the full potential of current and future technological advances finds its way into elementary and secondary schools.

Application, by its nature, requires one to use learned materials in new and concrete situations (Bloom, 1956). In terms of computer technology, this means that the classroom teacher must learn how to apply the hardware, software, and computer languages to specific classroom situations. A knowledge of the technology, itself, will not suffice for very long. The practical, everyday, instructional applications of computer technology will have a greater effect than surface useage of the computer for one or two hours per week.

---

Richard A. Diem is an associate professor of education at the University of Texas at San Antonio.

Colleges and universities in an effort to provide catch-up training in computer technology have offered to teachers coursework, in various formats, at both the pre- and in-service levels. Most of the classes have concentrated on hardware familiarization, introduction to BASIC, and evaluation of software. While these efforts to serve a useful purpose in orienting the novice user to computers, they do not provide the type of application study, that in the long run, will show teachers how they might actually use computers as part of their repertoire of classroom pedagogy.

Instruction in curriculum design, development and evaluation must accompany technological training. Working together, the practitioner can take the content of computer coursework and interweave it within subject matter. Construction of long-range developmental patterns of instruction with technology as an adjunct pedagogical mode could then ensue, instead of the types of current computer classroom efforts that are based on software availability and willingness to bend curriculum to meet hardware-time requirements.

The training of teacher-designers would begin to alleviate some of the problems of poorly constructed software. By providing practitioners the ability to devise solutions to their own, classroom specific, instructional problems, not only would the uses of computer technology improve, but the teacher's entire methodological repertoire would gain. Immediacy, in terms of feedback and evaluation concerning software, would ensue at a faster and perhaps more productive rate. Classroom-specific software, long thought of as impractical, could begin to be developed under this type training scenario. Not only would courseware of this type provide teachers with direct access to the developmental aspects of instruction, but, if done correctly, also improve quality of instruction.

This type of training would include development-of-needs assessment tools to determine class and individual instructional needs both in content and technological areas. It would also emphasize an understanding of subject matter so that proper instructional decisions, in terms of when to use the computer, could begin to take place. Evaluation, an afterthought in most classrooms, would also have to be improved if any positive measures of instructional performance were to be collected and analyzed.

The kind of academic efforts mentioned above are not pie-in-the-sky dreams. They are based on long-standing successes and failures replete in the history of American education. Internalization, in terms of a practitioner's understanding and useage of technological innovation, must take place if the innovation is to become part of daily schoolwork. If this does not occur, in some manner, in the next two years, the schools will turn away from computer technology much as they did 20 years ago when television, the then current video technology, was consigned as a baby-sitting device to be used on rainy days. A tool as powerful as the computer should not be thought of as simply a tool for mathematics, special education or word processing; instead, it must be looked at as a device that can aid in education's basic goal-increasing understanding and knowledge.

## References

- Bloom, Benjamin, S., ed. *Taxonomy of Educational Objective: The Classification of Educational Goals, Handbook I. Cognitive Domain*. New York: McKay, 1956.
- Bork, Alfred. "Computers in Education Today—and Some Possible Futures," *Phi Delta Kappan*, December 1984, Volume 66, Number 4, pp. 239-243.