Fostering Computer Competence in Schools

School systems can promote computer literacy among teachers by starting at the administrative level, making inservice comprehensive and long term, providing concrete support, and offering opportunities for participation.

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A comparison of "average" teachers with computer literacy "seekers" indicates that certain interests, attitudes, and sources of encouragement characterize those who seek to become computer literate. The basis for the comparison was a National Education Association survey that assessed teachers' knowledge and opinions about computer-related topics (Norman, 1983). The "average" teachers were 1,700 randomly selected teachers who participated in the original spring 1982 NEA survey, and the computer literacy "seekers" were 61 teachers who completed the survey in a computer literacy graduate course during the summer or fall of 1983 (Killian, 1984). Because schools can affect many of the conditions associated with voluntary technological growth, consideration of teachers' differences can provide insight for staff developers.

Knowledge and Skills

How do average teachers differ from computer literacy seekers in terms of computer knowledge and skills? It would be reasonable to expect that those who have had some prior training or experience with computers would be more likely to sign up for a computer literacy course. But that was not the case in the NEA study. Average teachers and seekers both reported a lack of a computer background.

Seventy-nine percent of NEA respondents and 84 percent of the workshop participants classified themselves as "untrained" about computers. Both groups also rated themselves low in knowledge about all computer subjects, and seekers were even lower than average respondents on several self-estimates. Whether or not their perception of ignorance was accurate, it seems that feeling "illiterate" is often linked to self-improvement efforts. Thus, helping teachers analyze the extent of their knowledge about computers would seem to be a good place to start staff development planning.

Computer Interests

Predictably, computer seekers reported a higher interest in many subjects and uses for the computer than did their average counterparts. Some background information provides insight about their responses: though most of the seekers reported no prior computer training, the majority came from school districts that had recently included some inservice computer orientation. As a result, these teachers were at least acquainted with specialized terms and able to identify areas of interest such as word processing, data management, and simulations. A brief, practical schoolwide or districtwide orientation to computers puts teachers in a better position to articulate their needs and interests.

Beliefs and Attitudes

When asked to rate the likelihood of certain events occurring by the year 1990, seekers were more positive about their perception of how computers would influence schools and teaching in general, as well as their own careers. They were more likely to project computers as "basic" in teaching and teacher education, and even linked computers to innovative teaching. They were less likely to anticipate that teachers would be replaced or become obsolete because of computers. To what extent these positive attitudes were the products of individual dispositions or the result of the way computers had been introduced in their respective school districts was not clear. It would, however, seem safe to assume that computer beliefs and attitudes are substantially affected by the school district environment, and that it is reasonable to use school district resources to promote positive attitudes toward computers whenever possible. Keeping teachers actively involved in planning and decision making about computer policies, acquisitions, and allocations may go a long way in alleviating computer fear and in promoting voluntary participation in computer projects.

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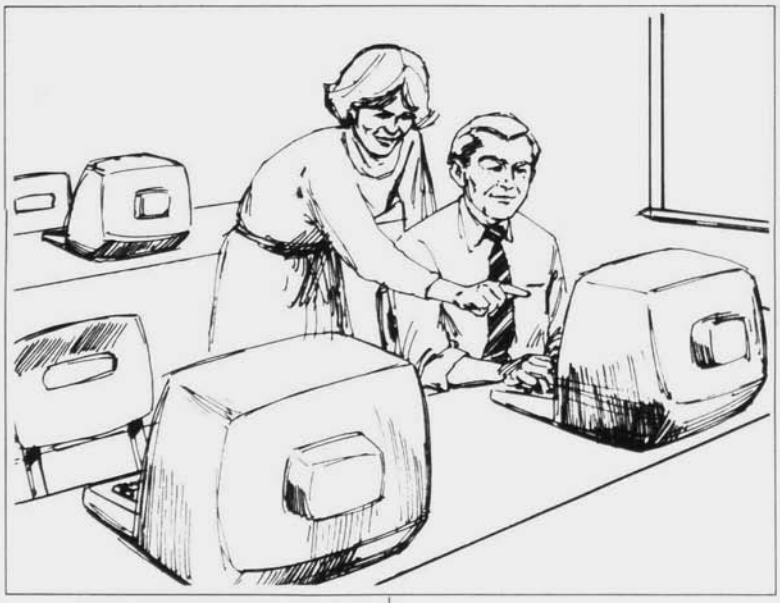
Sources of Encouragement

When asked what sources had encouraged them to use computers in their teaching, seekers were more likely than average teachers to designate students, other teachers, principals, curriculum specialists, superintendents, and the school board, as well as family and friends. Noteworthy about this list is that all but the last source exist within the school environment. Evidently, a wide range of people within schools are sparks for interest in computers and have potential to promote positive attitudes toward computer use. The practical implication for staff development is that educational leaders as well as classroom teachers will have to update their technological skills if computer literacy is to become "contagious."



Guidelines for Staff Development

If we accept the evidence that teachers who seek computer literacy often come from supportive school environments, an obvious course of action is to provide such an environment for all teachers.[1] Guidelines to help educational leaders provide a nurturing climate include the following:

1. Start inservice at the top. Administrators and supervisors are more likely to promote effective use of computers if they are themselves knowledgeable about computers and competent and comfortable with their use. Sources of information and training include educational periodicals specializing in computers, college courses, and topic-focused workshops offered by professional organizations.

2. Choose comprehensive, long-term types of inservice. Caution should prevail in decisions about computer education for administrators and teachers. Many current computer education programs focus on teaching skills in only one programming language or on promoting a specific software program. Such courses do not measure up to the specifications of computer literacy curriculums published by a variety of education associations. Participants prefer inservice that can be translated into more efficient, effective classroom practice. These prototypes can be a boon to districts seeking to institute comprehensive computer literacy programs.

3. Back up good intentions with concrete support. Inservice programs are only the beginning of long-range integration of computers into the curriculum. More likely to make the difference in the long haul is day-to-day financial and resource support. Such support must come in many forms, including ample hardware and software, released time or pay for computer responsibilities, access to resource personnel, and compensation for coursework and curriculum development. Policy support is important as well: districts should be as lenient as possible about rules for giving staff

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access to equipment at times when they are not responsible for students. Whenever possible, hardware and software should be loaned to faculty members overnight, on weekends, and during vacation periods.

4. Make good ideas contagious. The enthusiasm of those who are discovering computers can easily spill over to the rest of the faculty if the opportunity exists. Many a convert has been made by the teacher who insists on demonstrating how simple life can be with Grade Book or Bank Street Writer. Concerted efforts to capitalize on this proselytizing can pay off. Networking of ideas, resources, and equipment among and within schools should be given moral and financial support. Equipment, software, and related periodicals should be as central and visible as security considerations will allow. Teachers are not likely to experiment with programs that are kept in the principal's office or are available for five minutes at an inservice program. But when the faculty can learn at leisure and make their first awkward mistakes without large-group attention, they are likely to overcome the hurdles of new programs and integrate them into their teaching.

Another effective form of networking is a districtwide microcomputer newsletter. Issues can include contributions from students, teachers, and administrators as well as excerpts of articles from professional journals. Subjects of interest to readers will range from reviews and suggestions to news items about local workshops, course offerings, or software exchanges. Newsletters also provide the opportunity for districts to show support for individual or building efforts by featuring accomplishments and programs.

Integrating Computers into the Curriculum

Educators have been warned for several years that computers will change the nature of teaching and learning and possibly even replace teachers. The result of such dire predictions is that the computer literacy movement has intimidated both teachers and staff developers.

Fortunately, as educators become more active consumers and critics of computer software, they become more selective about the claims to which they give credence. Textbook vendors who package workbook exercises as drill-and-practice software do not find such "innovations" easy to sell to the teacher who understands the expense and limitations of such programs. On the other hand, the computer-competent teacher recognizes the power of software that will open up new horizons: computer simulations and LOGO-type languages, which offer new opportunities for active learning; and word processing, which encourages students to revise and perfect their final drafts. Whatever the choice of software programs, their integration into the curriculum will continue to require talented and effective teachers.

Nor will the role of staff developers be drastically altered by this new technological priority. The challenges of staff development for computer competence are not so very different from the challenges we have faced in the past. The principles that have traditionally guided effective change efforts will work with this effort as well: success will lie in cooperative, gradual, practical efforts within the school environment.□

[1]For assistance in program planning, see: Anderson (1980), Martin and Heller (1982), and Melczus (1983).

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