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The key to successful implementation of technology into the instructional domain is the involvement and preparation of staff personnel as catalytic agents.

Strategic Planning and Staff Development in Computer Applications

by Christine M. Black and Dr. Larry E. Decker

The introduction of inexpensive microcomputers and the concerns expressed in the national report, *A Nation At Risk*, place pressure on educational institutions to be responsive to innovation and futuristic direction in planning and implementing the use of technological equipment. Larry Blasch, educational consultant for IBM, points out the fact that "many school districts are being forced into buying computers by a society that says, 'Thou shalt have.'" (AS&U Roundtable 1985) Twenty states already have legislative mandates which add "computer literacy," a phrase which has no clear content or universal meaning, to high school graduation requirements. (Crawford 1984) These and other indications suggest that computers will be included in many future school budgets.

Although the American public reinforces the Madison Avenue sales pitch that personal computers can do anything, the importance of development and training of personnel using the computers, especially teachers, is given little attention and is often understated. (Hall-Sheehy 1985) Scanland and Slattery (1983) suggest that teachers must understand the necessity for instructional improvement and its relationship to "personal philosophy of the teaching/learning experience, the nature of the teaching role, national and educational long-range goals, and present perceived roles within the educational process." (McMeen 1986)

There is a sense of ambiguity and uncertainty about equipment and its relation to the necessity of microcomputer installation within the school program. Conflicts of professional opinion and public sentiment center on the polarization of instructional programs rather than technologi-

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cal homogenization of instructional applications of computer use for improved educational and curricular function.

Dr. Edward E. Brickell, Virginia Beach City superintendent, recently cancelled the purchase of \$350,000 worth of computers and software designated for kindergarten through second grade with the query, "Are they enhancing the instructional process the way we think?" (Boyer 1986) Thomas Mulkeen and Toby Tentenaum at Fordham University doubt "cognitive benefits of learning to program: and suggest a moratorium on computer instruction." (Pipho 1985) Parker (1984) cites a September 21, 1983 *Washington Post* editorial addressing this computer concern with the statement:

Without thoughtfully designed instructional programs that are thoroughly understood by teachers and made a part of their routine curricula, computers will be of no more enduring interest or value to students than the latest arcade game. (Parker 1984)

These questions and opinions are indications of an emerging concern which focuses on the importance of effective utilization of human and economic resources and the importance of developing a strategy to prevent the purchase of inappropriate or obsolete hardware. Microcomputer technology may be the tip of the iceberg. The next dimension of technological wizardry, such as robotics, slow-scan television, and advanced satellite networks, is looming on the instructional horizon. (Decker and Krajewski 1986)

Training and Staff Development

Lack of computer use by well-intended staff, lack of administrative knowledge of computer hardware, and computers placed in closets focus on the question of educational accountability and credibility to responsive planning. The cost of initial computer placement with no program standardization in the industry, shakeouts of manufacturers and some product lines, and a lack of interface between the home and school place additional emphasis upon the priority of properly trained personnel. (Neights and Jobe 1985)

Training and staff development is generally recognized as a need, but uncertainty exists concerning the dimensions and design of the programs. A 1984 report by the Office of Technology Assessment, *Computerized Manufacturing Automation*, is cited by Schuck to make the point that:

Individuals and employers are demanding education, training, and retraining programs (however) . . . There is a basic uncertainty about how current instructional programs should be revised or expanded to reflect the increased use of advanced technologies and changing skill requirements, given the ongoing nature of technological change.

Training plans must consider more than the development of skills. The first step in strategic planning related to the use of computers is to develop a philosophical statement for the division. The statement should delineate the beliefs and values the division places upon the affective worth of the individual student to society as a result of educational participation. The philosophical statement should be an integral part of the division's mission and the long-range goals. Once this statement concerning technological participation and subsequent long-range goals has been developed, an executive committee should use it in formulating staff development plans.

In designing a staff development program, the ratio-

nale should be to train staff in computer use and to familiarize personnel, especially teachers, with the selection of equipment to enhance instructional possibilities related to division goals and planning. Technological improvement and advancement are a given; and as Catherine Mitchell of the University of North Carolina emphasizes, "It is a mistake for educators to devote too much time to teaching the operation of machinery." (Pipho 1985)

The development of a strategic plan is critical. However, Bender and Church (1984) identify the following areas which may impede computer training program development and implementation:

1. Lack of acceptance of the need for strategic and contingency planning.
2. Continual changes in technology.
3. Financial limitations.
4. Lack of knowledge of existing resources.
5. Unfamiliar jargon.
6. Resistance to newness and change.
7. Lack of strong and continual administrative support.
8. Staff roles not clearly defined.
9. Unclear performance standards
10. Lack of acceptance of the need for reward and motivation procedures.
11. Lack of recognition of the need for feedback and follow-up training.
12. Ineffective time management.

Areas of Computer Application

Strategic plans must consider the potential areas of application—(1) computer-assisted instruction; (2) computer-managed instruction; (3) administrative applications; and (4) communication applications—and training and development considerations in each area.

Computer-assisted instruction consists of flashcard tutorials or text courseware which appear on a screen that advances when the students press a return key. The basic drawback to this system is the lack of provision for critical thinking skills and the lack of flexibility within the structure of the program menu.

Computer-managed instruction permits program flexibility and instructional extension. However, teachers must be aware of equipment and computer programming to fully appreciate the technological amenities of curriculum development.

Administrative applications focus on a data-based management system which permits a district or individual administrator entrance to a range of data elements and information manipulation through a specified format. A data base which includes all pertinent information can produce reports, teacher schedules, room availabilities, and other applications without entering new data. Routine reports can be produced as needed; consequently, administrators must be well-trained and versed in the integration of computer systems to realize the full potential of the equipment.

A wide range of communication applications is possible. The word processor, text-editing tool, is capable of writing letters, bulletins to parents and staff members, general correspondence, and making reports efficiently and economically. The electronic spreadsheet, such as Visi-Cal and Multi-Plan, enables administrators to modify budget plans, payroll programs, and education inventory controls. Again training is necessary to utilize both hardware and software efficiently.

Personnel Training

The participation of educational administrators and instructors in the development of a strategic plan is critical because the design of the program will depend on the anticipated areas of computer application. IBM suggests the forum format to organize and initiate a cooperative team effort.

At the division level, the "tech team" should be composed of individuals with the appropriate experiences and backgrounds to provide expertise concerning recommendations, advice, and counsel. Prior to the initiation of a forum, a needs analysis which consists of physical plant data as well as student enrollment and course projections should be compiled into one interrelated organizational component.

The forum should be designed to challenge the education of today with the technological developments of tomorrow. Discussion should focus on the most viable method to implement technological education with the needs and wants of the community. Questions which emphasize the relationship of computers to the mission and philosophical purpose of the division should be answered and understood by all division members and community segments prior to initiation of a computer strategic plan. Privacy laws related to feasible physical security, new storage possibilities, and copyright legalities should also be addressed prior to total program involvement. Through forum participation, a pilot study can be developed and conducted which incorporates the computer strategic plan in relation to instructional development into a research-based educational site prior to total district involvement and commitment.

The initiation of a strategic plan responsive to continual changes in technology permits flexibility. By logically disseminating information among personnel, long-range objectives are generally defined and understood by all staff members. Through the enactment of a plan which outlines the immediate objectives in relation to a long-range educational perspective, "key actors" acquire a sense of mission and purpose in the development and nurturing of individual school needs. (Martisko and Ammentorp 1986)

The key to successful implementation of technology into the instructional domain is the involvement and preparation of staff personnel as catalytic agents. The role of the principal as instructional leader and liaison agent of the community and division policy is critical. Through active participation with staff, parents, and students, the principal can be an active role model for microcomputer applications. As a principal becomes more confident and proficient, instructors and support staff are more likely to accept the computer as an extension of instruction.

Every subject teacher and administrator should have direct input and should participate actively in the computer curriculum development process. The perpetuation of the myth that computers are the property of mathematics or science departments is self-defeating to the total instructional component.

Training plans must consider the needs and wants of instructors and the importance of the focus of leadership on the total process to combat "computer phobia." Personnel must be aware of computer jargon and the strengths and weaknesses of educational technology and understand the role of each individual within the total educational program. In-service training should utilize community corporations, college classrooms, and computer advisors as extensions of the schoolhouse environment.

Summary

Winston Churchill once stated that "first we shape our

structures than afterwards they shape us." Educational administrators and instructors are the technological architects of the electronic schoolhouse. Decisions concerning school programs will affect generations across the myriad of society. Educators cannot afford to lose sight of the purpose of education.

Technology is not the solution to all instructional situations or the answer to all instructional problems. As architects of technological applications in education, instructional professionals need to comprehend and use the potentials and recognize the limitations of computer hardware and software in the school setting. Training and staff development programs must focus on enhancing administrators' and instructors' ability to integrate computer capabilities in the school setting within the educational plan.

As architects of technological applications in education, administrators and instructional personnel in a school division must develop a strategic plan which incorporates multiple options for the new, intermediate, and experienced computer user. They cannot afford to adopt a "wait and see" attitude in relation to the division's involvement in the use of computers. This attitude will place the division in jeopardy of retardation and stagnation—conditions which students, staff, and the general public will become increasingly aware of as inexpensive technological apparatus continues to be introduced for home use.

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