DOCUMENT RESUME

ED 257 417 IR 011 603

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TITLE The Computer Supervisor: Your Next Administrative Hire.
PUB DATE [84]
NOTE 18p.
PUB TYPE Viewpoints (120)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Administrator Qualifications; *Computer Assisted Instruction; *Computer Oriented Programs; *Computers; Interpersonal Competence; *Program Development; Program Implementation
IDENTIFIERS *Computer Supervisors; Management Skills

ABSTRACT

Technical, interpersonal, and managerial skills are necessary in order to assume the responsibilities of a computer supervisor. Technical skills refer to computer proficiency and include an in-depth awareness of the methods and procedures needed to implement various facets of computer education in school settings, such as knowledge of computer hardware/software, knowledge of programming languages, awareness of computer organizations and consortia, awareness of computer literature and research, and knowledge of computer applications. Interpersonal skills, or the ability to work effectively and efficiently with other people on a one-to-one basis and in group settings, relate to effective communication, cultivation of resources, and community involvement. Managerial skills refer to the ability to direct and organize the computer curriculum into an educational reality. Skills in this area include staff supervision, curriculum development, budget planning and management, the ability to conduct program evaluation, and knowledge of scheduling. This article lists six references. (LMM)

THE COMPUTER SUPERVISOR: YOUR NEXT ADMINISTRATIVE HIRE

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School district initiatives with computer technology have suffered "growing pains" for three major reasons: insufficient information about computer hardware and software, poorly trained teachers and lack of coordination (Wagschal, 1984). Given that positions are being created to help supervise district-wide efforts, it is necessary to outline the roles and responsibilities of such personnel. The following article describes three skill areas necessary for those assuming the responsibilities of a computer supervisor: technical skills, interpersonal skills and managerial skills.

Technical Skills

Technical skills refer to computer proficiency. This includes an in-depth awareness of the methods and procedures needed to implement various facets of computer education in school settings.

1. Knowledge of Computer Hardware/Software

First and foremost, a computer supervisor must know about computer hardware and software. Computer hardware, like any manufactured product, has an array of features for purchase consideration. Critical features for any computer system involve software selection, ease of use, durability, reliability, computer memory, documentation, programming languages available and

expandability (Patterson & Patterson, 1983). Like searching for the ultimate automobile, hardware selections must take into account the needs of the users. While some hardware might be extremely durable and reliable, it may not have expandable memory or the ability to add on peripherals. One of the most competitive horse races in the computer industry has to do with a computer's memory, the capacity for putting information into the computer. Recently, Bell Labs announced its production of a megachip, another breakthrough in the history of computers. Considered to be the beginning of the fifth generation of computers, this megachip not only will increase a computer's memory but also will allow for the creation of smaller machines. Although school districts are not in the business of creating scientific miracles, we are responsible for providing students with the best possible background for assimilating into society. Therefore, computer supervisors must be aware of the advantages and disadvantages of each type of hardware so that they can help teachers and other administrators make informed decisions.

Software selection also is a primary consideration for hardware purchases. The desired software must be compatible with the hardware; otherwise, all planning efforts will have been futile. For instance, the Apple has been the bellwether among educators; however, it could become tomorrow's anachronism. It is, therefore, important to recognize the quixotic nature of the computer field and plan for changing trends in computer hardware purchases.

While publishers are making an effort to produce software which is compatible with a number of machines, there still exists a compatibility gap. Often, in college courses or in-service programs for educators, we are faced with the problem of finding good software programs for the variety of computers housed in school districts. Unfortunately, what seems to occur is that school districts get a good deal for x number of computers, buy them and then deal with the poor quality of existing software programs. Notwithstanding curricular goals and objectives, they purchase whatever appears on the market so that students are at the machines (Komoski, 1984).

Computer supervisors are in the position to recommend what should be purchased in terms of software. Their awareness of the district-wide curricula for computers and other content areas should serve as a guide to teachers and administrators.

With respect to software used for computer assisted instruction (CAI), supervisors should know and be able to help others understand the categorical differences between the drill and practice, tutorial, simulation, gaming and problem-solving software. They should also help educators to recognize which software types capitalize on the branching, graphics and reinforcement capabilities of computers. Similar to ordering texts, educators need to be made aware of changes which reflect current theories and practices. Also essential for software expenditures are strategies for decision-making. Other than student and teacher

previews of software, supervisors should inform teachers of the on-line and off-line software review databases. Teachers should know now to use, for instance, the on-line database MICROCOMPUTER INDEX, available on DIALOG (an encyclopedic database) (Glossbrenner, 1983), to retrieve information about software packages for particular content areas. They also should be cognizant of such print sources as TESS (The Educational Software Selector) and EPIE (Educational Product Information Exchange) for other types of software reviews. Using these databases help teachers to appreciate software features, otherwise not considered before purchase.

2. Knowledge of Programming Languages

The extent to which computer supervisors need to know programming languages depends on the needs of the school district. At the very least, they should know about the various languages and their applications. They should know how the languages should be taught and at what levels. We have seen the inclusion of logo for primary students, BASIC for intermediate/junior high school students and PASCAL for secondary students. We also have seen BASIC used solely throughout the grades or in combination with COBOL. What emerges from these observations is the need for the computer supervisor to assess what is necessary for preparing students for post-secondary education or vocational pursuits. Although not directly involved in the instructional process, computer

supervisors need to have the skills for preparing and refining a district's computer curriculum.

Interestingly enough, a task force from the New Jersey State Department of Education recommended that secondary teachers responsible for teaching a computers in education course should have fifteen credits worth of computer courses before they can be certified in the state. While still being debated, the idea of certifiable computer teachers has become a prominent issue. Taking this one step further, if teachers must have certain prerequisites to be qualified to instruct, should not computer supervisors have comparable training?

3. Awareness of Computer Organizations and Consortia

Computer organizations and consortia at the state and national levels provide excellent support services for computer educators. Intended to enlighten educators about computer usage in schools, these organizations contain tremendous reservoirs of information about most areas connected with computer technology. While some consortia such as the Minnesota Educational Computing Consortium (MECC) conduct workshops on computer literacy, other organizations such as MicroSIFT (Microcomputer Software and Information for Teachers) serve as clearinghouses for microcomputer instructional software (Baker, 1982).

Although impossible to know about the existence and purposes of all organizations, the computer supervisor should know

about and possibly have an individual or institutional membership to the most useful groups. This information should be made available to the educational community, particularly if software can be purchased at a discount or workshops can be provided at a reduced rate when a school district has an institutional membership. Too often, teachers do not know that they can buy a utility package, for instance, from one of the consortia for one-fourth the price of a commercially prepared disk. At the very least, teachers should have access to information about their district's organizational memberships. This can put them in touch with journals such as PIPELINE, published by CONDUIT (a research and development clearinghouse for computer-based courseware) or newsletters such as MICROCOMPUTERS IN EDUCATION, published by QUEUE.

Another noteworthy organizational support system is the government, both federal and state. With the recognition of the technological breakthroughs in educational arenas has come the allocation of funds for all aspects of computer education. If teachers and supervisors are privy to grant information, they may be able to help bring funds into the district for computer equipment.

4. Awareness of Computer Literature and Research

Knowing that any computer article written today will fade into obsolescence by tomorrow is enough to dissuade anyone from

trying to keep abreast of the computer literature and research. However, as the local leader for computers, the computer supervisor should look for publications which have instructional and administrative implications for the school district. While seemingly little has been written to convince educators that computers are a substitute for human instruction, a great deal has been reported to support computers as an instructional supplement. This research should be shared with colleagues, especially those who are in the throes of embarking on this new phase of instruction.

5. Knowledge of Computer Applications

Probably, the most revolutionizing aspect of computers has been its versatility as an application tool. Used for word processing, computer assisted instruction, database management, electronic spreadsheets and telecommunications, the computer has served a purpose for anyone so inclined to discover its protean nature. Enabling students, teachers and administrators to save time, organize information, and communicate with people from afar, this machine -- with its accompanying software applications programs -- has transformed burdensome tasks into more simple procedures.

The computer supervisor should be aware of a variety of separate and integrated application packages for students at different grade levels. Knowing when and how to introduce word

processing, for instance, is as important as understanding the suitability of different word processing packages. Awareness of the application options available through such information retrieval databases as CompuServe should be considered. Presently, some databases are offering attractive subscription rates to school districts so that their services can penetrate the educational community. So that the potential of these on-line databases are realized, the computer supervisor should be able to help teachers explore access capabilities and instructional options.

Computer Assisted Instruction, the most widely used computer application, needs to be researched in terms of sound educational evaluation policies. Other than assisting with the purchase of quality software, the computer supervisor should help to establish school-wide or district-wide databases on teachers' software evaluations. These internal databases will provide teachers with considerable input for adapting software to varying student needs. Teacher-created databases also help teachers appreciate the potential of computer applications which, inevitably, is communicated to students.

Interpersonal Skills

Interpersonal skills refer to the ability to work effectively and efficiently with other people on a one-to-one basis and in group settings (Burg et al., 1978). These skills are equally

critical for the success of any computer programs; otherwise, the curriculum's objectives will not be achieved.

1. Effective Communication

Effective communication with teachers, administrators, students and the community is essential for programmatic success. The computer supervisor needs to demonstrate to teachers an understanding of child development, learning theory and classroom "realities". As a key figure in the school district, the computer supervisor needs to be visible to teachers and students. "Pressing the flesh" is an important human and supervisory tool. This person also must be able to interface with other administrators. In recognizing the unique climate and varying needs of each school, the computer supervisor needs to be flexible in setting up the computer curriculum.

The ability to speak before professional and non-professional groups is another interpersonal element. Parents and teachers, who initially may be unfamiliar with computers, will feel uncomfortable and patronized if this individual cannot communicate in clear and concise terms. Obviously, this places a burden on the supervisor to discern the audience's knowledge level, a particularly important aspect of in-service workshops. If the supervisor has to explain the most fundamental concepts of computers to an audience, it should be approached in a non-

threatening manner. In essence, the supervisor must speak in "computerese" without using it.

2. Cultivation of Resources

Another interpersonal skill is the ability to cultivate and discover external resources. These resources, ranging from software vendors to governmental agencies, are extremely important in program development.

Healthy relationships with hardware and software companies could help the school district become a site for the development and validation of new computer materials. This could enhance the district's and supervisor's role as educational leaders while providing the district with innovative materials at little or no cost.

Establishing a meaningful and reciprocal relationship with neighboring private industry could be a source of funds for the computer program. It is well known that the private sector is becoming more involved in public education by donating their hardware and expertise to schools for helping students become more computer literate. Knowing key people in governmental agencies can assist the district in receiving grant money for special computer programs. Federal and state governments recently have developed initiatives to assist local school districts in the creation of

uter and technologically-oriented curricula.

3. Community Involvement

Depending upon the type of community in which the supervisor works, there may be excellent resources from which the supervisor can rely on for assistance and support. The supervisor should establish a community advisory council which solicits the community's advice and expertise. This council could act as an avenue for solidifying community support and could help the supervisor identify community resources who would be willing to participate in the computer program.

Furthermore, the publication of a regularly scheduled newsletter detailing the program's accomplishments and activities would help to keep parents informed of their children's progress.

A computer supervisor schooled in interpersonal relations will find that the human element is the key to advancing technologically.

Managerial Skills

Managerial skills refer to the ability to direct and organize the computer curriculum into an educational reality.

1. Staff Supervision

Staff supervision begins with the realization that formal evaluations merely scratch the surface of being an effective school leader. The computer supervisor must be visible to all staff and make frequent visits to the computer laboratories. A cognizant supervisor is always "evaluating" and the excellent teacher

realizes that situation. At one time or another, the supervisor must trust the staff to carry out their jobs in a competent manner. The supervisor should be seen as a guide and supporter, not a threat. Also, the supervisor will gain credibility from the staff when, on occasion, s/he teaches a lesson or in some way interacts with the students.

The computer supervisor also must be aware that teachers are people. They have the same foibles, faults and misfortunes as anyone else. A sympathetic ear to these problems, coupled with some proposed solutions, can go far toward earing the loyalty of one's teachers. In short, the supervisor must go beyond the call of duty if s/he expects the teachers to do the same.

2. Curriculum Development

Curriculum development, as a managerial function, will demonstrate how well the supervisor can balance the needs of the children with the needs of the teachers and district. The supervisor must make curriculum development a participative and democratic process. S/he must realize that it is the teachers who have the best knowledge of the children's learning styles and capacities. This knowledge must be used to construct a curriculum where the students experience success in a challenging manner. While some teachers may feel that certain aspects of the computer curriculum are beyond the reach of certain students, the supervisor must possess the managerial skills to effect these concepts into

the curriculum without alienating teachers. Also, the supervisor must be aware of the total district curriculum so that the computer curriculum is not taught in a vacuum.

3. Budget Planning and Management

The "nuts and bolts" of administration often are boring and mechanical. However, a good supervisor regards budget planning as an opportunity for program enhancement. The following areas should be considered when planning a budget: hardware, software, equipment (noncomputer), security, periodicals, in-service and conference expenses.

Hardware - Hardware purchases are the core of any computer curriculum. The computer supervisor must be aware of the bid process and the discounts offered by computer companies. Depending on the school district, the ordering of hardware can be limited by space and budgetary constraints. Also, since hardware is an expensive outlay, it is possible that the budget for this item will go in peaks and valleys.

Software - This is the "consumable" line item of the budget. Software should not be ordered just because there is money for it in the budget. It should fill a need in the curriculum and be purposeful. Software budgets must be flexible so that the supervisor has the freedom to transfer funds from one account to another, if justified.

Equipment - Furniture for computers can be expensive. Items such as tables, carts and covers must be taken into account. A rolling cart which permits the movement of a computer from one room to another might be an excellent expenditure. Also, computer laboratories, like other classrooms, need blackboards, posters, paper clips, staplers and other materials which facilitate teaching.

Security - Computers must be protected like any other piece of equipment. Special door locks, carrels and other security devices should be ordered. Another purchase option is insurance with a low deductible to minimize the loss of equipment.

Periodicals, In-service and Travel - Because journals, in-service workshops and conferences can hone teachers' skills, significant funds should be appropriated for these expenditures. Not only will teachers learn from these various sources but also they will develop a sense of professional pride.

4. Ability to Conduct Program Evaluation

The evaluation practices established for teachers and students should be part of a total program evaluation plan. Given that evaluation is for improving, not disproving, curricular innovations, supervisors must establish a sequential, cyclical plan for evaluating the computer education program. In accounting for financial and personnel resources, realistic plans are more apt to reflect the district's needs as opposed to someone else's

theoretical ideals. This only can lead to improved plans with computers, something from which no school district is exempt.

5. Knowledge of Scheduling

Getting 120 students on 6 machines is tricky, even with the most resourceful problem-solver. While hardware is appearing more steadily than originally imagined (Komoski, 1984), scheduling gymnastics still need to be exercised. This must take into account the number and type of machines. Student differences need to be recognized, yet accommodated, so that the more able do not monopolize computer usage. Intra- and inter-class groups should be created to provide equal access to all, a basic premise behind any educational innovation.

Like any good administrator, the computer supervisor will make mistakes. Computers have become an excellent medium for closing the gap between administrators and teachers. A wise computer supervisor will understand that people, not machines, create successful programs.

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