School Computers: Quality Education and Optimal Use

by M. Balestie

Computer-related instruction has been one of the most misused, mishandled and misinterpreted aspects of recently introduced, genuinely significant, educational developments. There is crass misinformation about not only WHAT should be done but also HOW things should be done in a school environment. Most of the "computer" problems plaguing schools do not arise from within the student body itself, but originate from poorly-advised administrative and instructional staff. Therefore, sheer commercial interest has played a major part in deciding what's adequate for school labs. Whereas there is always room for documented second opinion as well as cyclic updatal and revision, it is clear that the subject is by now old enough to identify and summarize essential field pillars as well as class-tested, clear-cut paths to achieve precisely specified goals.

In order to ensure delivery of quality education and optimal computer use in a school environment, there are a few essential aspects that must be considered, and obviously, subsequently formally implemented.

In a successful installation one can distinguish three fundamental components:

- a solid staff development plan (i.e. user education)
- a carefully selected library of programs (i.e. software)
- a good enough set of machinery that will run the software (i.e. hardware)

There is simply NO SENSE in simply accumulating stacks of equipment without having reasonably adequate programs to drive the hardware nor a structured staff development plan. What follows is a summary of each of three components previously mentioned. However, before going into some specific detail about each of them, the individual who is mainly responsible for the over-all program outcome must be introduced.

computer program coordinator

The first step in starting a program is to establish a computer coordinator position. As it will be briefly described in this proposal, the many tasks involved go far beyond the expectations of a regular teacher. Reference <1> contains a very complete sample job description, including qualifications, and responsabilities. The urgent need to appoint a centralizing coordinator cannot be neglected. Reference <2> very aptly explains why: "if the school's computers 'belong to everybody,' then nobody has a vested interest in managing and caring for this valuable resource. The coordination and management of a school's computing resources should be the responsability of a paid staff member who is given the authority to manage the resources according to the school's goals and objectives so that maximum educational use can be realized. The computer coordinator should be compensated, be given a decreased teaching load, or be relieved of other duties."

A computer coordinator is responsible for curriculum

development and integration, hardware and software purchase orientation, staff development seminars, resource scheduling, and networking responsabilities, as well as accomodating facility requests. It is false economy to simply make a teacher absorb such duties. For one, he or she may not have the proper training, and/or experience. Besides narrowing program accountability - administratively extremely interesting - and acting as your front-end against unresponsive dealers, the coordinator carries the responsability bulk of ensuring the success of the school's program.

A computer coordinator is THE "one-stop" resource person, and is also responsible for the organization of computer summer camps, computer clubs, and overall teacher coach (e.g. school newsletters, electronic grading and filing systems). Desirable, although depending on school size, may include administrative processing duties.

Having clearly defined some of the functions of this essential position, and thus having someone accountable for the system operation, it is now possible to advance safely and succesively present the three mentioned aspects.

staff development

Professional development is the most important component of the system. Educated users will make educated choices and educated recommendations. Formal training is the most efficient way to convert a base of low knowlegde users to proficient individuals. Equipment breakdown, especially of disk drives, printers, and disks, often results from misuse and uninformed staff.

Successful staff development can be achieved by partially or wholly funding university-to-school continuing education programs (e.g. visiting college instructors) or in-service teacher training workshops (e.g. evening courses). In the former case, seminars carrying credit from accredited universities should typically include both computer-related topics as well as instructional strategies. There are a host of American universities that purvey this kind of service, being the following just a few examples:

College of Education, Georgia State University
Curriculum & Media Dept., Southern Illinois U.
University of Illinois, Champaign
University of California (extension courses)
University of Oregon

Layered teacher training is an effective inservice technique. Combined with regular coaching sessions it will substantially increase both teacher self-esteem and proficiency. Timely information is still the best confidence builder.

software library

The second component of the system, the driving software, is often overlooked, thus lowering program quality. The quality a school computer curriculum wishes to achieve is geared directly

to the adequacy of the available software library. Its fundamental importance can be explained in visual, perhaps more familiar terms: the quality or success of a T.V. network chain, or a fashionable discotheque, depends not only on the actual equipment used but to a greater degree on the video and film selection in the former, and tape and record selection in the latter. Faulty music will still play faulty in sophisticated stereos, as lousy shows will still be unbearable on Sony TVs. Consequently, it is likely that the end product, be it patron attendance, TV ratings, or value instruction, will be way far off from projections. Thus, even when designing an educational system, a balance much be reached to fairly allocate resources to BOTH software and hardware expenses. A common, safe, business software purchase approach is to shop for software that's appropriate first, and then find a suitable piece of machinery that will run it. Software selection and evaluation are not hard if "you know how to." For beginning teachers, ordering through catalogs is not as reliable as basing purchase decisions on coordinator advice and/or qualified "word of mouth." Further, it is advisable to form a small but school-wide committee to participate in the decision-making process as well as represent different interests.

On-trial, examination periods along with securing educational discounts are MUST policies in a school environment. A good rule of thumb for starting a program is to allocate an "annual software budget of $ 1.25 per student, augmented by the sale of disks and general scrounging" as Reference <7> suggests.

Education and computer magazines are one of the best ways to keep track of what's going on and what new applications can be inserted in the curriculum. Electronic Learning, SchoolTechNews, PC World, PC and PC Tech magazine all provide different but well-researched, thorough views.

hardware aspects

Depending on the context, the hardware purchase decision can be narrowed down to selection of either Apple-compatible or IBM-compatible machinery. Following an U.S. model, it must be said that Apple provides the best over-all solutions to the education field, if market share or published software are considered valid measures of acceptance. Apple's suitability lead increases further as one progresses from university down to high school and elementary level. To quote Reference <4>: "Today Apple II computers account for some 60 percent of all computers in schools, and at least 75 percent of available educational software is written for that line."

The ever increasing "installed base of DOS-compatible PCs now well past 16 million in the U.S." (Reference <6>) currently educationally undernourished, will certainly influence instructional software publishers to consider IBM as a profitable alternative. Besides, more tightly budgeted schools are now buying IBM clones, therefore increasing chances for good educational software to surface. However, at the time of this writing, 1989, it's very unlikely - based on Apple's educational software evolution rate - that a comparable body of software such as Apple's will appear before two years. A quick glance at

any educational software catalog confirms this: Apple sections are thick with offerings, while IBM and Commodore are slim, back-page sections. Would this deem an IBM lab unusuable school-wide? Before jumping into such a gross simplification a careful specialist would remind the user of the expanding IBM user base in the educational field mix, a fact that enables a large growth potential capable of challenging Apple's dominance in the future. This argument is further and strongly backed by the fact that IBM-compatibles are much more uniform to network than an assortment of otherwise hardworking Apple-compatibles, specifically the Apple IIx series, and low-cost Lasers and Franklins. Reference <4> also arguably points out that "Apple IIs are machines with limited memory and slow processing speeds, not likely to march the nation's educational institutions into the twenty-first century."

Besides the major choice of the computer "norm" - Apple compatible or IBM compatible -, networking is the second major technical issue a school has to face. Further discussion of networking in a medium-sized educational setting is beyond the scope of this paper. However, the tremendous control and ease of operation enabled by educational networks is briefly described in Reference <3>. The reader might also want to consult Reference <5>.

Incorporation of video training is also part of integrating technological tools in the instructional process. Many organized tape collections are available from a variety of non-profit institutions. As in the case of computers, successful incorporation vitally hinges on adequate program selection. Networking, instructional videos, and telecommunications, are not discussed here as they already individually exceed the scope of this work.

conclusion

The brief treatment of the above mentioned aspects of computer-related instruction, staff development, software selection and hardware equipment, simply provides a starting point, a very rapid overview of potential trouble areas and their solutions. Program excellence is certainly hard to achieve but there's no reason why any approach should settle for less. A key figure in this problem-solving process is the computer coordinator, who cautions, anchors and smoothly steers the whole program. As in any other organizational process, it is the printed statement the most powerful means to make several parties get to terms and commit themselves to clearly defined courses of action. This skimpy introduction is just a beginning.

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