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ABSTRACT
        The paper discusses ways in which leadership can improve
quality computer service in the curriculum. It further discusses ways in
which teachers and principals can work together to provide the necessary
ingredients for a good school technology program. This paper is divided into
the following sections: (1) "Staff Development and Technology"; (2) "Faculty
Meetings to Improve Technology Use in Mathematics"; (3) "Assisting Teachers
as Needed"; and (4) "Technology and School/Classroom Newsletters." (Includes
six references.) (DLS)

LEADERSHIP IN TECHNOLOGY USE IN SCHOOL MATHEMATICS

Leadership is needed to provide quality computer service in the curriculum. Teachers alone are not in a position to provide leadership in technology use; although, teacher enthusiasm and participation are musts! Teachers and principals need to work together to provide the necessary ingredients for a good school technology program. Ritchie (1996) wrote the following pertaining to reasons why the use of technology is minimal in schools:

* a lack of administrative support
* inadequate staff development and technological support
* low quality, quantity, and success of technologies in the classroom
* nonexistent or cursory plans for adopting and implementing technology into a school
* the failure to allocate a technology coordinator to help train teachers and coordinate the technologies
* a lack of funds and personnel to maintain equipment
* continual assessment of content acquisition through traditional methods
* establishment of a broader clientele to establish a technology culture (Hoffman, 1996).

The first starred item indicates the need for principal/supervisor leadership and participation to implement a quality program of technology use in the curriculum. Mehlinger (1996) wrote:

Without going into any detail regarding specific pieces of hardware, I can say with confidence that schools can expect more integration, interaction, and intelligence from future technology. In their early days in school, computers and video were regarded as separate entities, and it was assumed they would stay that way. In fact, we can expect a continuing integration of these technologies. Voice, data, and images will be brought together into one package. One current example of this process is desk top video. In a single, relatively inexpensive unit, one has telephone (voice), computer data (storage and manipulation), and video (sending and receiving moving images) capabilities. Those who use the machine can talk to people at a distance, exchange documents, work collaboratively, and even see collaborators on the screen.

A very important facet of leadership in mathematics will continually be to provide quality, sequential programs of instruction using technology.

Staff Development and Technology

There are several excellent ways to emphasize inservice education for teachers. In supervising student reaches in the public schools, I took careful notice of one school that had a good professional library for teachers. There were publications available for teachers to read and use. These included the Teaching Children Mathematics, Mathematics Teaching in the Middle School, Social Education, Science and Children, The Language Arts, and The Instructor, among others. I noticed teachers during free time browsing and reading selected of these professional journals. The principal of the school sent memos at monthly intervals to teachers as to valuable articles to read on technology use in the school. The principal of the school needs to secure a professional library for teachers and get teachers involved in reading articles on improving instruction through technology. Hopefully, teachers will try out new ideas in their very own classrooms, from their reading. Feedback may be given to others in terms of how the innovation worked out in the classroom setting.

There are more and more articles written on technology use in the classroom. A teacher may become very versatile in using technology in the classroom from reading and experimenting with new ideas in teaching/learning situations.

The workshop concept can be used wisely to help teachers use technology more effectively in the classroom. The workshop should be very flexible and openended so that there is wide participation from participants. I suggest, first of all, to have a general session with all teachers and the administrator participating. This provides opportunities for participants to explore and select vital problems to solve in technology use. Each person here should be stimulated and encouraged to identify problem areas in technology use. The problems may arise from teachers who have definite needs pertaining to technology use in the classroom. Teachers may have read articles in the professional library about technology use that they would like to implement in teaching and learning, but need assistance to do so. Adequate time needs to be given to problem identification during the general session.

Problem areas identified might be the following, as an example:

1. using data bases, E mail, and computer networks (Each of these may be separated as problem areas to be solved).

2. using Internet and Web sites.

3. using the word processor to motivate pupils in learning.

4. evaluating and using quality soft ware to improve the curriculum.

5. using the concept of integration of technology into the curriculum.

6.. using interactive videos.
7. using the word processor to communicate with parents.

From the general session, participants may choose the problem area they wish to work on. Committees may be formed for each problem area identified in the general session. The number on each committee should be held flexible, but small enough so that the number is not unwieldy or too large. I believe each committee should report to the other committees as to what has been found as answers to each problem area in technology use. Questions might then be raised by other committees on data gathered for problem solving. Wide use should be made of ideas secured for computer use in mathematics.

Throughout the workshop, consultant help must be available. The consultant(s) need to be highly knowledgeable and have a caring attitude in desiring to be of assistance.

In addition to the general session and committee endeavors to work collaboratively, there needs to be time for individual participants to select problem areas of their very own to work on. Consultant help must be given on a one on one basis. The goal is to assist teachers to do a better job of making full use of technology in the classroom as well as increase learner achievement.

Many participants have been highly satisfied with the workshop idea on developing technology skills on the part of individual teachers. A rating scale may be used to evaluate the quality of the workshop. Items on the scale need to be clearly written so that a rating may be given each item. The following are examples of items to be rated on a five point scale:

1. I learned to use the word processor in ways to motivate pupil writing in mathematics in the classroom.

2. I learned to assist pupils in sending messages through E -mail.

3. I learned to use the internet as a proficient way of teaching and learning.

Participants giving a five rating to any of the above the items received much help from the workshop to assist pupils in the classroom. A "one" rating would indicate the assistance given was well below average. A three rating would indicate "average" help received during the workshop for any one item on the evaluation form. Feedback from workshop participants indicate what assistance needs to be given in the school setting. During actual class time as well as before and after school, teachers should ask for assistance from the designated school leader to become more proficient in computer use in the mathematics curriculum.

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Faculty Meetings to Improve Technology Use in Mathematics

There should be time on an agenda for a faculty meeting to guide more optimal use of technology in the classroom setting. Agenda items need to be in the hands of participants at least one day prior to the faculty meeting. In this way , participants have time to think through possible solutions to identified problem areas. An improved mathematics curriculum should be an end result. Each faculty member should have ample opportunities to place items on the agendas. At the faculty meeting, consultant help needs to be available in the area of technological services. Committees may work after the faculty meeting in gathering information in answer to each problem area in the use of technology.

Out of committee member concerns, teachers have been able to take time off from teaching to observe a classroom setting where the teacher is known to do well in integrating technology into the mathematics curriculum. Meetings have been attended at district expense on technology and computer services in the classroom. Those attending should report back to other faculty members on what was learned and put to use in the classroom. Opportunities need to be available for teachers and administrators to learn about and implement technology in the classroom.

Teachers need to know procedures involved in obtaining assistance when technological problems arise. Problems pertaining to making maximal use of the computer as well as when computers go on the blink should be in the offing.

Assisting Teachers as Needed

Leadership must be provided when teachers need help in the classroom setting. These are some of the more opportune times to assist teachers contextually in ongoing lessons and units of study in mathematics. The teacher who experiences a problem at a given moment should be given assistance if at all possible. Some of he items of assistance might be he following:

1. how to retrieve a needed document that appears to be "lost" in the data base.
2. how to use CD ROMS to maximize pupil learning.
3. how to develop an electronic portfolio.
4. how to develop a classroom mathematics dictionary, using the word processor.
5. how to use selected items on the control panel.

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6. how to start file sharing.
7. how to use the power secretary.

The individual teacher or the team of teachers need to make their needs known in terns of specific help needed in using the word processor. If the assistance is not available as needed for computer assistance, the teacher(s) need to write down help that is needed to develop sequentially in successful use of technology in the mathematics curriculum. Skilled teachers may also help those who need assistance in context when computer use is in evidence.

We are truly in an information age in which there are so many outstanding sources of content for pupil acquisition. Pupils need to have ample opportunities to secure a variety of subject matter on a topic. It does cost money to have the latest of technology in our schools. But can we afford to be without it? Pupils today, in a few years, will be in the work place where the information age will be even more clearly defined as compared to today. Pupils of every race, creed, and religion must have the chances in an equitable manner to be able to use the latest data securing sources.The upper income level of pupils will have these opportunities of securing information through Word Wide Web and Internet in the home setting. Other pupils should have equality of opportunity to use state of the art sources to obtain information (Ediger,1997, p. 204).

Technology and School/Classroom Newsletters

School newsletters are essential in communicating with parents and others in the community. The goal of the Newsletter publication should be to inform parents as to what is being taught and emphasized in teaching and learning situations. Comments from receivers of the Newsletter should be valued. A school should be open ended in terms of parents visiting and corresponding with teachers and administrators in school. Certainly, the public schools are not closed societies. Feedback from the lay public may provide ideas on improving the curriculum. Adequate information in the Newsletter should pertain to what is being emphasized in the mathematics curriculum. The word processor and printer along with photocopying are excellent devises to use as technology to communicate with parents using the Newsletter approach.

As a university supervisors of student teachers and cooperating teachers, I saw an example of how the classroom can communicate with parents of children and in this case fifth grade pupils. For the mathematics section of the Newsletter, pupils stated what had been learned during the concluding week. The teacher then typed on a word processor what had been said by these fifth grade pupils. What then

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went into the classroom Newsletter which was taken home by the child to his/her parents? The following had been experienced during the week of March 15-19:

We studied division of fractions and realized its close relationship to multiplication of fractions. We also learned how important it is to be able to divide fractions and use this information in and outside of school. We were given five cookies for each set of four pupils. Now we had to find how much each person received of the total number of cookies. The division had to be made so that each one could receive his/her share of the cookies. At the beginning, we did much guessing as to how the five cookies should be divided. The teacher helped us in our thinking until we figured out how to be exact when coming up with the final answer. Each pupil individually or in a committee wrote five lifelike problems emphasizing division of fractions. The written work was typed into the word processor. Printouts were exchanged with other learners to complete the problems in division of fractions.

With word processor use, the documents look very neat and attractive for pupils to take home to their parents.

Conclusion

Schools need to make full use of technology to guide pupils to learn as much as possible. Leadership needs to be available to teachers so that technology use is operating as well as possible. Leadership is also needed to provide inservice education in technology use (Ediger,1996).

Promoters of computer use in the classroom claim that exposing pupils to Web sites, e-mail, and news groups promises more than the means to securing a job in the next century. Technology boosters also predict that the use and mastery of the internet and the World Wide Web will produce affective changes that can be measured to produce increased student self esteem and confidence. Whether working at home or at school, as an individual or in cooperative learning or team setting, students will become 'infotectives," i.e. independent thinkers, researchers, inventors, inquirers, capable of solving problems that often require the active direction of a teacher or superior...

In expanding the learning environment to include data bases, computer networks, and other library resources throughout the world, the internet makes it possible for students to shape their own education. Once the easy accessing protocols are learned, the student can dive into the resources in his or her home and/or library without the constant supervision and intervention of the teacher. Lao Tzui's dictum, "He who teaches least teaches better," describes student centered teaching , learning, and assessment environment in which the student can access

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information from multiple perspectives and learn to use this information to solve complex problems (Maskin, 1996).

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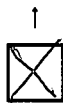
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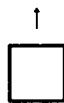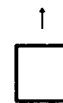| The sample sticker shown below will be affixed to all Level 1 documents	The sample sticker shown below will be affixed to all Level 2A documents	The sample sticker shown below will be affixed to all Level 2B documents
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