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ABSTRACT

An inservice program was designed to improve the integration of computer technology in a school setting through improved teacher awareness, skills, and knowledge surrounding technology uses in both a classroom and lab setting. Goals included improved teacher literacy, student literacy, and curriculum integration. Outcomes were measured through a staff questionnaire evaluating changes in use and attitudes concerning computer technology integration, an examination of problem lists in computer labs for type and frequency of problems encountered while running the equipment, and a review of checklists for progress made on skills listed for students. To increase staff literacy, an inservice program utilizing present software, hardware, and their applications in the classroom was presented. Software training and demonstrations were offered according to appropriate grade level, interests, and skills. Student literacy was addressed by the development and planned initiation of a checklist of grade appropriate skills in the use of technology. Results show that teachers reported positive growth in attitude concerning the use of computer technology in the educational setting. Workshops which focused on the various age groupings served to expand the understanding of that particular group of students and the specific concerns of the teachers involved. Five appendices are entitled: "Survey of Technology Use"; "Survey of Teacher Need"; "Technology Inservice Evaluation"; "Sample Checklist of Computer Skills"; and "Student Survey of Computer Use." (Contains 24 references.) (MAS)

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Improving Computer and Technology Integration in a School Setting

by

Jennifer Amico
Cluster 61

A Practicum I Report Presented to the
Ed D. Program in Child and Youth Studies
in Partial Fulfillment of the Requirements
for the Degree of Doctor in Education

NOVA SOUTHEASTERN UNIVERSITY

1995

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PRACTICUM APPROVAL SHEET

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ABSTRACT

Improving Computer and Technology Integration in a School Setting. Amico, Jennifer Z., 1995: Practicum Report, Nova Southeastern University Ed. D. Program in Child and Youth Studies. Computer Training/ Inservice Training/ Technology Integration/Computer Literacy.

This practicum was designed to improve the integration of computer technology in a school setting. An inservice program was designed to improve teacher awareness, skills, and knowledge surrounding technology use in both a classroom and lab setting. Goals included improved teacher literacy, student literacy and curriculum integration.

The writer used teachers as trainers and the software already present in the building and existing hardware. As technology developments continued the program was adapted to fit the needs and interests of the teachers involved. The entire school community including parents, students, staff, faculty and support personnel were invited to become involved in the training process.

In addition, the creative housing and scheduling of computers was addressed to help in the accessiblilty of the existing hardware. Having all platforms and software available for all students was viewed as necessary for computer literacy to be achieved. Grade appropriate skills were identified for students as the first step towards developing those skills in children.

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Chapter I

Geographical Information

The setting for this practicum is a small city in the southeast. The permanent population is approximately 168,000. Seasonal residents, during the winter months increase the population to approximately 250,000. The median per capita income is approximately $43,000 (U.S. Census 1990)

The major employment areas are agriculture, retail, and the service industry. Manufacturing accounts for less than 3% of the industry in this community. Employment opportunities are focused in "smokestack free" commercial ventures (Collier, 1993).

Work Setting

The work setting for the proposed practicum is a private, co-educational school, pre-school through eighth grade. The school philosophy is based on children reaching their full individual potential. Recognition of individual strengths, weaknesses and learning styles is an integral part of the educational culture in the classrooms. Teaching and learning use exploration and discovery methods within an organized, schoolwide curriculum. Many learning experiences are presented for the students, with field trips, independent research, and creative expression encouraged.

Current research concerning learning and intelligence is always under consideration. Staff development is encouraged to keep teachers aware of the variety of learning styles present in children and techniques that can be utilized to achieve the most

learning for each child. Self-esteem is an important part of the school setting, as is encouraging all children to attain their personal best and to be confident individuals.

The students and staff present diverse and various backgrounds. Students range from three year old pre-schoolers to fourteen year old eighth graders. Presently there are students from five foreign countries attending the school. Class size ranges from 14 - 18 in self-contained graded classrooms. Teachers are supported with full time classroom tutors from pre-school through kindergarten, half day tutors from first through fifth grade, and two tutors in the middle school setting. Tutors provide a range of support services from clerical to teaching assistance.

Teachers on staff are all experienced and have a variety of teaching backgrounds, including international education, special education, careers in the arts, private practice counseling work and administrative positions. Many of the staff members hold multiple degrees and have an inordinate amount of graduate credit hours completed. Two staff members are currently seeking doctoral degrees, the director has successfully completed doctoral level work and most staff members hold a masters degree or its equivalent. Tutors range from holding high school degrees to masters degrees.

Teaching personnel are on staff for related arts classes. Music, art, physical education, and foreign language are taught in all grades. The middle school students are offered choices in alternative classes in the fine arts area but physical education is required. These related arts classes are considered an integral part of the school curriculum and instruction is integrated into the classroom curriculum goals whenever possible.

Scholarship programs have allowed students from a range of backgrounds to attend this school. The majority of parents are working professionals or own their own businesses and tend to be middle or upper income levels. These parents are actively involved in their children's education and have expressed the desire to make available to their children as many educational advantages as possible.

Staff training is ongoing and an administrative priority. Weekly inservice meetings are utilized to update staff. Inservice meetings are organized with a skill acquisition focus and release time is readily made available for attendance at professional conferences and workshops. The staff is open to advances in educational theory, techniques and materials and are encouraged to be creative and innovative.

Work Role

The writer is presently a third grade classroom teacher and elementary coordinator. As a classroom teacher the need to have children prepared to deal with both present and future technology is increasingly apparent. Technology has been in use in the building for eight years, and a technology committee has been formed to focus on the acquisition, servicing and instruction of technology in the building. Recent acquisitions of both hardware and software has created questions and discussions as to how best meet the needs of children utilizing technology. As both a classroom teacher and elementary coordinator, the communication concerning questions, concerns and difficulties is recived frequently.

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Chapter II

Problem Description

Computer technology was not fully integrated in this school setting. MS DOS compatible computers were used solely in a lab setting for grades three through eight. They were not utilized in the classroom setting and potential instructional use of these machines was not being fully explored. Apple IIGS machines were being housed in classrooms below third grade, restricting use in the upper grades and preventing a lab setting for their use. Auxiliary equipment, such as a wide screen television with a signal converter connected to a computer, had remained unused since its acquisition.

Student use of technology had remained at minimum levels, and actually had shown a decrease at certain grade levels. Limited student time on the computer was a concern of both staff and students. Various solutions had not achieved a satisfactory resolution to the variety of needs and desires concerning the use of technology in this school.

Curriculum use of technology was limited to word processing and research programs. Additional software and its applications, both in the classroom and lab setting, were not being presented to students. Technology time was utilized at the middle school level as a time to create reports or assignments. Organized skills concerning technology use were not being taught, and classroom use of computers was very limited. Use of the computers below second grade was limited to word processing and skill review software. Software use above second grade was limited to word processing and a multi-media encyclopedia, three teachers reported using simulation software once a week.

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Teachers had limited skills in technology utilization. Staff awareness of hardware and software available was also limited and had led to requests for more training and knowledge in order to best meet the needs of their students. Computer technology was not being fully integrated in this school setting, with some equipment remaining unused and the amount of student use limited and or decreasing at certain grade levels.

Problem Documentation

Teacher surveys (Appendix A) revealed that the addition of unfamiliar hardware and software required more and varied training. New equipment was in the MS DOS platform and had included the addition of hard disk drives and CD ROM drives and software. Teacher training was stated on fifteen of seventeen surveys as a real need in order to use the technology with students.

Accessibility of computers themselves was stated as a problem for teachers. Eleven of seventeen teachers responded on the survey that accessibility was a difficulty in technology use. Limited hardware had resulted in a lab setting for MS DOS machines for use by grades three through eight. This had caused restricted individual classroom use. The Apple II GS machines had been distributed to primary classrooms, eliminating a lab setting for those machines and the compatible software. Teachers have expressed a need for the availability of both classroom and lab settings for all the equipment.

Instructional technology, such as the wide screen television and converter unit, had not been used in classrooms, even though the equipment was fully mobile and available to be signed out for classroom use. This equipment was designed for whole group instruction and the integration of technology in the teaching process. It can be utilized both for technology instruction and to enrich lessons across curriculum areas, student projects could also incorporate the technology equipment. Sign out sheets attached to the equipment showed it had never been signed out of the lab setting or used in the lab itself.

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Software use, as reported by teacher surveys and observation of students, was based mainly in word processing and a CD ROM encyclopedia program. Three teachers reported simulation software in use, once a week in classrooms in grades four through six. This software requires Apples II GS machines, which are presently housed in primary classrooms. Additional computer capabilities of spreadsheets, databases, graphics, and informational programs were not being utilized. Computerized science lab software also had not been used extensively in grades five through eight for data collection and manipulation of information.

Student time involved with computer technology had shown a slight decrease in the elementary grades. Early childhood classes had remained the same at approximately thirty minutes per student per week. Grades three through five reported a decrease in actual individual, student time on the computers. Middle school reported a slight increase to one hour a week per student due to scheduling priorities and use of the lab as a class setting. Student time utilizing technology was quite low with teachers all indicating a desire to increase the student time spent on technology use.

A review of listed difficulties with the equipment in the technology lab showed a lack of basic problem solving abilities with the computers, and limited knowledge of how the machines should be operated. Basic operational steps of the technology hardware were not always followed, resulting in systems malfunctions which could have been avoided. The repeated presence on the list of problems that can be addressed by the operator, showed the absence of beginning skills and information to solve those difficulties.

Parental comments collected through informal interviews by teachers showed a real interest in technological areas. Questions concerning skills such as, keyboarding and expected levels of competence, were frequently asked. The importance of the use of technology was seen as a priority for their children and parents had become involved at the school and classroom level to help achieve that goal.

Use of the MS DOS lab was restricted to students under supervision of an adult. This was seen as a necessary step to aid students and to help protect the hardware and software from possible tampering or accidental damage. This presented difficulties to students with work in progress on the computers. Long term projects, requiring further research from the encyclopedia or word processing software, presented challenges to students for work time other than class time. After school and before school hours were not supervised times in the lab, and students were forced to try and find a staff member willing to supervise the lab for added independent work time. Scheduled classtime in the lab was the only time available for student use on those particular computers.

Causative Analysis

Restricted use of technology in the classroom had been the result of difficulties concerning computer hardware, software and lack of teacher training. Teachers and students were not seeing the full benefit of the available equipment due to these difficulties. Lack of training was preventing teacher use of the computers, unfamiliarity with new hardware and software was restricting both teacher and student use of equipment and housing of equipment made it difficult to obtain and use.

Teacher training had not yet met the needs of the staff but the teachers remained open to the use of computer technology in the classroom. Equipment was being underutilized due to a lack of familiarity with the hardware and software. Lacking the proper training in the use of technological equipment, teachers were prevented from using the computers to provide learning experiences for their students.

Classroom utilization of computer technology beyond word processing had not been presented to teachers. Hardware and software familiarity, and its use with group learning situations in the classroom, needed to be a part of a teacher training program. Practical ways to achieve technology use in the classroom had not been adequately

addressed. In order for teachers to utilize the machines in the classroom, training on equipment, such as the television converter unit, had to be made available.

Currently available software packages and the variety of their applications had only been presented in a cursory manner. Familiarity with those applications and ideas for their use in the classroom had to be provided in order for teachers to experiment and plan programs independently. Training needed to include the awareness of current and future software needs.

Housing of computers had resulted in certain grade levels having the Apple IIGS machines unavailable for their use, and lab schedules had restricted MS DOS machine utilization. Availability of computers needed to be addressed in order to solve the difficulty teachers faced in obtaining computers for student use. The difficulty of students using the computers independently was a result of no scheduled open work time in the lab.

Relationship of the Problem to the Literature

As technology so rapidly advances there is no question that it must become an integral part of a child's education. How best to achieve that goal has been the basis of much study and research. It becomes increasingly clear that the underlying philosophy of computer technology in schools must undergo a change in accepted practice. As teachers are the core of the educational process their involvement with technology must also be addressed in order to meet the needs of the children they are teaching.

Technology use as a tool for instruction and a means of manipulating information is discussed by Betts (1994). He sees computers as another part of the instructional process, such as a pencil or calculator. If computers are to be seen as another means to improve learning then teachers must be taught how to use them. Training teachers in the use of equipment must be accomplished rapidly if they are to be expected to incorporate that equipment in the instructional process. As information increases the demand to

manage that information also increases. Teachers need to be taught those information management skills that they are expected to teach to students.

Computer advances have changed the manner in which computers themselves are viewed and used. The proliferation and advancement in the technical capabilities of computers has allowed even the youngest or most inexperienced computer user to become proficient. Papert (1993) relates the necessity of changing the meaning of computer literacy to indicate children are becoming habitual users of computers. He feels the term literacy should refer to how they are used, not the understanding of the technology itself. Teachers need to view computer literacy, both for themselves and their students, as reassurance that learners are capable of using technology to achieve learning goals. Focus of instruction should encourage the use of computer technology and teach skills in how to use that technology.

The expansion of computer technology frequently has resulted in more to teach. If the computers are viewed as teaching tools, not as something to teach, instruction in all curriculum areas will benefit. Additional tools for improved teaching are always welcome in the classroom and computers should be viewed in this positive way. The use of technology as a tool is reviewed by Kanning (1994). He supports the concept that computer literacy should be viewed not as an extra curriculum topic, but as a tool to be used to achieve already stated curriculum goals.

The creation of separate locations and hiring computer instructors has caused many classroom teachers to view technology education as a subject taught independently of existing curriculum. Papert (1993) discusses the need to undo this concept of teaching computers in special rooms by special teachers. He supports the view that technology instruction should occur in conjunction with the existing curriculum goals not as separate goals.

The use of computer technology can allow the teacher to create and present multi-media instruction experiences in the classroom. The use of multi-media presentations aids

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in reaching the learning modalities of all learners and encourages understanding by students. The need to have all areas of the curriculum incorporate technology, both as a media tool and as an instructional tool for students (Nickerson, 1992), must be addressed. The computers can be used as a means both for presentation of material and demonstration of understanding by the learner. Teaching the skills needed for group or individual projects utilizing the multi-media capabilities of computers provides learners with multiple ways of expressing knowledge gained.

As learning and intelligence theories continue to stress the individuality of the learner, computers can serve as an avenue to reach all learners. The use of instructional software, and its audio and video capabilities, can aid in reaching multiple modalities for learners in the classroom. The use of technology to address individual learner strengths and modalities is reviewed by Haze (1992) and Luehrman (1994). They see the use of the technology in small group learning situations allowing multiple expressions of understanding and helping create products utilizing a variety of sensory modalities.

As new and more advanced computer equipment is added in the school setting, teachers and administrators frequently report common equipment problems. Teachers are not adequately trained to deal with these problems as they arise. Frequent breakdowns in equipment due to user error and lack of training result in underutilization of the computer equipment or worse the equipment remaining completely unused. Buchsbaum (1992) reports many thousands of dollars of computer technology equipment in Washington, DC remained in boxes for years, because training did not accompany the acquisition of that equipment. Training in that city now has a budget twice that of equipment acquisition. Hurst (1994) also discusses the lack of ongoing training for teachers that meets their needs.

Administration must show support of the goals of the program and be willing to provide staff with needed training and help. Luehrman (1994) discusses the need for administrative support to be clearly present when new hardware or software is presented

to staff. The goals of a technology program must be supported by the administration and support provided for the staff involved.

Teachers need to see the applicability of new hardware and software programs in order to lend their support to their use. Needed teacher support is encouraged by having teacher needs addressed and reflected in the goals of the program. Kozma & Johnson (1992) found that implementation of program goals had more chance of success when specific needs were identified by the staff itself. They see the empowerment of teachers in the implementation process as encouraging the support necessary to achieve stated goals.

The accessibility of hardware and software plays a role in how much and for what purpose teachers use technology. If the machines and software are not readily available for teacher use the motivation to learn will diminish. Hurst (1994) writes convincingly that in order for teachers to use computers in their classrooms they themselves must be comfortable with them. His suggestions include computers set aside solely for teacher use.

Technically competent staff members will explore technology independently of required school programs. However, in order for computer technology to reach all students all teachers need to be exposed to technological advances and the training needed to utilize computer equipment. Meade (1991) sees the need for computers and related equipment as media tools to go beyond the already technologically competent teacher. Instructional opportunities to experience the wide variety of applications available in technology equipment utilization will encourage its use in more classrooms.

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Chapter III

Goals

The following goals were projected for this practicum. Computer technology would be fully utilized and integrated into all curriculum areas and student use of computers would increase in all grade levels.

Outcomes

Specific outcomes had been identified for this practicum to measure successful attainment of the stated goals.

After implementation of this practicum at least twenty of twenty-three current staff members would express on a survey that their knowledge and ability to use computer technology hac increased. The presence of teachers at two grade level specific workshops and six general workshops was expected. After attendance at the workshops, teachers were asked to return a survey concerning their feelings towards the equipment and respond to questions concerning their confidence about using the available computer technology.

Technology equipment would be fully accessible for all students and staff to maximize its use. Logs on the equipment would document use at all grade levels. Sign out sheets would document teachers using both computers and other technology equipment outside of the lab environment on a weekly basis. The implementation of this practicum would result in an increase of the equipment being signed out for use. Computers and the

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connected television would reflect weekly use in all grades above kindergarten. Evidence will be found on individual sign out sheets for the computer equipment.

Individual logs with each computer were expected to reflect use in all subject areas and a variety of software applications. Evidence of at least three curriculum areas and three different applications were looked for.

Response surveys and a review of log sheets were expected to show an increase in the time per day students spend utilizing computer technology. In the early childhood classes, pre-kindergarten through first grade, teachers were expected to report an increase to at least one hour a week of technology use by students, teachers in grades one through eighth were expected to report an increase to at least one hour a day of student utilization of computer technology.

Teachers were asked to carry out a least one example of group cooperative learning involving the use of computers during the training time. At least one student project per grade level was to include the use of graphics, text, and projection methods if appropriate. Eighteen of twenty-three classroom teachers were expected to report success with this group experience. Student use of computers was a requirement in carrying out the group project.

Grade appropriate checklists of basic skills on computer equipment was to be developed for students. All students were expected to achieve a satisfactory rating for at least eight of the ten skills present on the checklist. Focus of the skills was basic operation of computers not the understanding of the technology itself

A result of this practicum was to be at least an hour a day of open supervised time on the computer lab schedule. The use of the computers on an independent basis is possible only under supervised conditions. Lab schedules were expected to show this time reflected as supervised, free work time. A survey of middle school students was expected to show a majority of students responding positively to questions concerning independent work time being available for their use. Teachers also were asked to respond to questions

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concerning the availability of independent work time for their students. The majority of teachers were expected to respond positively.

Measurement of Outcomes

The expected outcomes of this practicum were measured utilizing a variety of methods. A teacher questionnaire was submitted by participating staff members to evaluate changes in use and attitudes concerning computer technology utilization. Selected students were asked to respond to questions concerning the availability of technology for their use. This survey was carried out in classroom settings. Problem lists in the computer lab and individual computer logs were examined for type and frequency of problems running the equipment. Checklists initiated with the practicum were reviewed for progress made on skills listed for students. Computer logs showed the frequency of use in the classroom and the curriculum area for which it was used.

Recording Unexpected Events

A journal was kept of the progress of this practicum. As teacher attitude and input were important factors for the success of this program, changes in format and content occured. A cooperative learning environment throughout the program was maintained, therefore adjustments in scheduling, presentations and sequence were requested. By keeping accurate records of expressed needs of teachers during the training sessions additions to the program could take place easily. Adjusting to individual skill levels and interests also required varying group sessions, both in size and focus.

The use of teachers as trainers occurred as much as possible, with outside consultants being incorporated when necessary. Presentations were modified whenever possible before they took place, with a coordinator handling the details to make the best

use of teacher time in the training sessions. Teacher requests for specific training as the program progressed were incorporated into the training schedule.

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Chapter IV

Discussion and Evaluation of Solutions

Computer technology was not being fully integrated in this school setting. Some computer equipment remained unused and the amount of student use of the technology was limited and actually decreasing at certain grade levels.

With the amounts of avaliable information increasing dramatically, teachers have to help students locate, gather and manage that information. Computer technology can help teachers achieve that goal. Kozma (1992) discusses the need to have the role of the teacher viewed in a different manner in order to provide the experiences their students need. He feels teachers need to view themselves as coach/mentors rather than leader/lecturers. By switching the role of the teacher to helper the student is allowed the freedom to use technology to explore and discover the means of using available information.

The necessity of training teachers in the use of technology to achieve curriculum goals is addressed by Balajathy (1989). He sees the need for teachers to be trained in the practical uses of technology in the classroom in a variety of curriculum areas. Staff can only be expected to use those tools with which they are comfortable and see the applicability of their use. Technology training should be focused on giving teachers the tools to reach already identified curriculum goals without the addition of separate technology goals.

Teacher use of technology needs to allow for the practice necessary for learning and mastering the use of the equipment.As with all new skills practice is important for mastery. Hurst (1994) reports increased success with training teachers when equipment is

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made available for teacher use when teachers have time. Teachers have limited time available during the work day for practice on technology and this needs to be taken into account when training programs are planned.

Hurst (1994) and Farley (1992) both see the need for administrative support of technology training goals and the need to involve teachers as trainers. Administrative decisions to commit the needed time to train and support faculty as they acquire new skills are seen as imperative for success. With this commitment from supervisory personnel training programs receive the emphasis and support needed to achieve their goals. Faculty support and enlistment can be encouraged by administration by the utilization of the faculty in the training process. Teachers as trainers succeed in the training program because they tend to be less theoretical and more practical in their presentations. Teachers as trainers are accepted more readily because they know the day to day problems of technology use and the best way to approach classroom use. Presentations by teachers tend to focus on applications that can be used in the classroom and ideas for teaching their use to students.

Workshops directed solely by consultants may or may not discuss the needs of the group or specific teachers. Involving participants from the onset ensures individual needs will be met. Training that involves teachers both as trainers and in the development stage tends to be more successful. Hurst (1994) reviews the need for teachers to be empowered in the training process by having their expressed needs addressed. The teacher/learner becomes actively involved in the learning process and views the role of teacher changing from leader to coach.

It is necessary to have teachers apply technology and to demonstrate improved learning situations in order to enlist them in the use of the computer equipment. As teacher commitment strengthens increased use of technology will follow. Balajthy (1989) and Farley (1992) see teacher commitment as playing an important role in the expansion of

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technology use in the classroom. Teacher commitment will be seen occuring as innovations take hold in the classroom and improved student learning is observed.

The addition of computer technology to classrooms requires that curriculum goals include the use of that technology. A variety of means to achieve existing goals can be offered by the alternatives that computers present. Kozma (1992) views the benefits of technology use as an interaction between curriculum goals and the environment where instruction takes place. As technology use increases the student learners become more active in the learning process (Hazeb, 1992). Control by the student increases also and the student's role in the process changes from a passive recipient to active participant. This increase in interactive learning will increase the learning and motivation to use technology in the classroom.

Technology use increases the use of critical thinking skills by students. Information is no longer received in a passive mode but used actively to produce solutions to problems. Luehrman (1994) sees improvement in active learning as children become users of technology to manipulate and create. The use of multiple information sources to locate data, such as resource sources, databases and networks is seen by Luehrman (1994) as the means to achieving students analyzing data and making decisions based on that data. The multiple sources and tools made available by technological equipment eases the process of comparing and manipulating variables and the analysis of alternative solutions.

Computers need not exist solely in the traditional lab setting, but can utilize the small group as a valuable learning tool. Taggert (1994) and Bruder (1994) use computers to encourage cooperative learning and group instructional experiences. Group gathering of data and group decision making can be made easier with the tools available using computers. Alternative suggestions can be considered and discussed with ease and group solutions achieved in a positive manner. A variety of methods to demonstrate group understanding can also be utilized with the capabilities of the hardware and software that is available. Publishing, graphics, projections, and audio techniques can be easily

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integrated using available technology for group projects that are stronger than individual efforts.

Enthusiasm in the learning process can be encouraged through the use of technology. Muir (1994) discusses the increase in both student and staff enthusiasm for projects and assignments by adding the use of computers. Skills once found difficult or tedious for some learners are aided by the use of computer technology. Reluctant writers can be found writing more and for longer periods of time when word processing is introduced. As multi-media research sources are made available the time spent browsing the resources increases as the ease of use increases. Even drill and review can become much less tedious by the introduction of technological equipment to encourage the learner.

Teachers themselves benefit from the use of technology in that their time can be readjusted. The more time a teacher has available the more time can be committed to planning for creative teaching and higher thinking skills activities. Balajthy (1989) sees teachers having more time to be involved with higher level thinking skill instruction when freed from their own tedious repetitive work. Grading, developing instructional materials, and record keeping all can be handled by computer technology once teachers have hardware and software available and are given the training in how to use them. The ultimate benefit is for the students.

As computer technology use grows in school settings, the manner in which computers and related equipment are housed is being addressed. A combination of both lab experiences and individual classroom use seems to be indicated as the desired approach to integration of technology in the school. Hancock & Betts (1994) see the lab setting as an important step in the familiarization of students with technology and its uses in the learning process. Instruction given to groups in a lab setting allow the individual to utilize the computer as teaching is occurring. This provides immediate feedback for the student and maximizes learning. Teaching the use of technology from one machine in a group

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setting results in less overall learning. Allowing exploration in the group setting permits learners to learn from the teacher and from each other.

Papert (1993) sees the technology lab setting however, as resulting in the isolation of computer use from mainstream curriculum goals. Lab settings, while beneficial for group learning, have established an attitude that special technology teachers are needed to teach in a special setting. This removes the technology from the realm of the classroom teacher and the classroom curriculum.

The movement away from the "one child, one machine" attitude, as discussed by Bruder (1994) places one machine in a small group setting for group learning. Children can learn from each of the members in a group and can achieve significant results. The classroom does not need the number of computers that a lab experience would require. One computer shared on a group basis can achieve a variety of learning goals for children. The use of cooperative learning experiences maximizes the use of generally limited hardware and answers teacher concerns surrounding the availability of hardware.

As technology use expands in schools, many districts are moving away from the traditional lab settings for their computer equipment. Mageau (1991, 1992) and Schultz (1991) discuss the many creative uses of hardware and software in districts across the nation. A combination of media center uses, technology labs, and classroom uses are being found to be the most effective means of achieving integration of technology in the instruction of children. Multiple uses answers the multiple needs of individual learners and teachers. Maximizing the tools currently available in a maximum of settings guarantees the technology will reach most students in a beneficial way.

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Description of Selected Solution Strategies

Solutions to the computer technology integration problem were offered by this practicum program. With the approval of the school administration an inservice training program for staff was set up. The plan incorporated already existing equipment and new acquisitions in the technology area. A variety of material was covered in the workshops in order to reach all staff/learners and their various skill levels. Both beginning and more advanced group experiences were offered and teachers selected those that best addressed their needs and interests. The applicability for participants in the workshops was increased by offering age appropriate software and activity suggestions.

Hurst (1994) discusses the need for the inclusion of staff, support personnel and students in training programs. Support personnel and students were included in the inservice workshops. It was hoped that students could be used in tutorial situations for their own and other classrooms. The motivation to increase both the use and knowledge of computer technology was spread throughout the school community by involving as many people as possible.

The use of teachers who have technology knowledge as trainers for others was seen as a positive addition to inservice programs by Hurst (1994). Having colleagues running workshops instead of consultants encourages teachers to believe in the practicality and applicability of the information presented. Theoretical workshops by those outside the classroom are many times viewed as not concrete enough to apply to the every day class situation. Teachers are also encouraged if they know the workshop presenter is just down the hall to answer questions when they try those same activities.

The difficulties of scheduling inservice training time for teachers is seen by Gursky (1991) as a leading cause for technology to remain underutilized in the classroom. Inservice training for teachers frequently involves day long workshops with no follow up support, or an afterhours workshop where they are expected to absorb totally new

material concerning the use of technology. As with all learners the attention rate diminishes with physical energy and therefore the amount of learning diminishes also. Creative scheduling of workshops with training ongoing was seen as a positive way to encourage the most learning by teachers and experimentation with the use of computer equipment.

Empowerment and involvement by teachers is important in any program to help ensure success. Meade (1991) reviews commitment of teachers as a need in the expansion of computer technology use. A foundation of support for the expansion of the integration of technology can be built by involving teachers in decisions concerning housing machines, needs for training and the direction that training should take. Ownership and input in the program helped motivate the participants to achieve success. Teachers frequently are presented with programs and equipment created by others which do not meet the specific needs or skill levels of the teachers involved. Success of programs tends to diminish as the enthusiasm and interest diminish.

The focus of this practicum was computer literacy and the maximum use of technology, therefore certain strategies were indicated to help achieve those goals. Teacher choice and individual learner skill levels was an important factor in planning workshops. A variety of whole staff and small group workshops needed to be made available. Choices had to be offered to help teachers select those workshops that would be most appropriate for their classrooms and their own skill levels. Introductory levels had to be available as well as more advanced skills and software, also the different computers, Apple IIGS and MS DOS compatibles, had to be covered. The entire staff needed to attend general workshops on the available equipment, how it is housed and how it can be utilized in classrooms and lab settings. Instruction in the use of the equipment and some problem solving had to be presented to staff.

Mini-workshop experiences in specific areas were made available for staff and student attendance. Giving participants the opportunity to choose particular skills, subject

areas, or software to learn, enccuraged specific interests and met individual learner needs. Strengths and knowledge within areas, could then be shared with others in a training or support role. All school members, staff and student alike, could assume the role of cooperative group leader.

Scheduling workshops in curriculum specific software and the means to integrate that software into the instructional process allowed teachers the power to make decisions concerning their interest and need. Obviously materials designed for middle school students in algebra would have no applicability for first grade teachers. Providing teachers the options to select those materials most useful to them was a successful beginning for integration in individual classrooms.

The entire school community was offered the opportunity to become involved in the training sessions. Older students, parents, support personnel, administrative help and teachers were invited to participate in workshops. It was planned students would then serve as tutors in their own and other classrooms. Training support personnel helped both teachers and students. Having all classroom staff trained on the use of technology resulted in an increase in the number of adults available to supervise independent work time in the lab. This will facilitate supervised free time on the lab schedules. An increase in technology knowledge throughout the school creates a more routine atmosphere for technology and encourage its use in many situations.

Software, as with all educational materials, is available in rapidly increasing numbers. Having a computer dedicated to software review will continue. Teachers however, were required to review the software on the computers. Grade level suggestions guided which teachers were to be expected to review specific software. This review serves two purposes. Teachers have to use the equipment in order to review the software, and this practice time on the computers strengthens skills. Second, future software needs can be addressed in a concrete manner, with examination taking place before purchasing

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Report of Action Taken

A strategy for implementation that would result in school wide computer literacy and the maximum use of computers in the classroom was carried out. Three main components were used to achieve the stated goals, staff literacy, student literacy and the accessibility of equipment. Staff literacy was used as a foundation for the use of the technology in the school setting. Student literacy was encouraged both for their own use in the classroom and as use as tutors for other learners. Accessibility of equipment and its applicability in classroom settings provided solutions to practical problems in technology equipment use.

Increasing staff literacy was accomplished with an inservice program carried out with administrative support. Teachers were presented a scheduled inservice training program utilizing present software, hardware and their applications in the classroom. Teachers were asked to complete a survey (Appendix B) on the first day of the program concerning their interest, level of skills, and computer technology in the classroom. Those surveys were used to create mini-workshops on selected software programs and assign various teachers to workshops they were willing to present or would like to attend. The questions teachers had concerning existing equipment were used to determine need in the operation of equipment. Providing training on already existing equipment and suggestions for its use built practical application resources for teachers. Staff responses repeatedly indicated the need for instruction on how to use the equipment and the integration of its use in the classroom.

Productive use of limited teacher time was taken into account by offering options of software demonstrations and training that were appropriate for individual grade level, interests and skill levels. Teacher/presenters were given the option of picking times and days that fit their schedules. Workshop participants were free to reschedule if needed.

Use of the work day as time permitted was encouraged and time frames adapted for the participants' schedules. This flexibility of scheduling resulted in an ongoing instructional workshop for classroom teaching assistants during the workday. Participation in the workshop was voluntary and weekly attendance averaged seven of the nine classroom aides. This high attendance is seen directly connected to the work day scheduling rather than added after school time.

Applicability of training was a major factor in the interest level of teachers and productivity at workshops. Having a variety of levels and applications available allowed teachers to attend only those workshops which directly applied to their classrooms or to their expressed interest. Software applicable to the various age levels and the possibilities of use were discussed in grade appropriate workshops. Concerns directly related to specific grade groupings were also explored during these separate workshop meetings. Early childhood teachers, pre-school through second grade, felt free to voice concerns over lab settings and the more complicated platform of the MS DOS machines, while middle school teachers were concerned most about increasing availability of the technology.

Attendance at general workshops to review equipment was expected of all staff members and available support personnel. Parents and selected students were also invited to attend workshops that they might find interesting. The necessary information on the use of existing equipment and suggestions for its use aided teachers in the confident use of the equipment both in their classrooms and in a lab setting. It was equally important support personnel feel confident in the use of the computer equipment as they frequently supervise children in the classroom and in the lab setting.

Teachers were used as resources to share skills they posses, as workshops leaders and to provide ideas for an instructional resource book. Development of the book will take place as staff members try new skills, adapt established skills, and create new ideas for use in the classroom. They were asked to contribute to the book, with ideas for

curriculum integration and suggestions for future use. All ideas and suggestions were to be organized for future teacher reference.

Student literacy was addressed by the development and planned initiation of a checklist of grade appropriate skills in the use of technology. Distribution of the lists and software suggestions for attaining those skills was planned during staff workshops. Teacher input was considered an important part of the development of the lists. Teachers were asked to provide feedback on the initial lists and comment of the appropriateness of the skills. The completion of the checklist will be a goal for the school year with a satisfactory rating to be achieved on at least eight of the ten skills listed. It would be expected most students would go far beyond this basic list of skills. Keyboarding skills will be included in the checklist, from the introductory level through mastery by fifth grade. Student work in group projects utilizing technology were to be reviewed for computer literacy. The demonstration of skills were to be initiated during this practicum and continue throughout the year with adjustments being made to the checklists at the completion of the current instructional year.

An age appropriate group demonstration of a project completed during the practicum timeframe was expected for students. Utilization of technology to create a project in a group setting encourages cooperative learning of technology skills for students. It was hoped teacher planning and facilitation of this activity would reinforce skills both for the student and the teacher. Presentation of the project for staff would allow direct sharing of positive aspects, possible problems, and cooperative suggestions from staff members. Teachers were asked to develop at least one project during the course of the practicum and present it to staff.

Current housing of computers was addressed in this practicum. Suggestions from staff concerning accessibility, utilization and mobility of the computers and other equipment were considered. The possibilities of mini-lab situations in the elementary and

middle school wings and the addition of mobile carts needed to be explored in order to expand availability of all types of machines in all grades.

A complete inventory of technology equipment and suggestions for use was distributed to all staff members with workshops carried out on its use. Staff needed to know not only what computer technology was available in the building but also how to use it. Computer technology, by its nature, generally requires practice to master but offers such possibilities of use it is imperative teachers be made aware of the basic use of the equipment. The review of all equipment took place, as new technology is not always the only equipment that needs to be presented to teachers. New and creative uses of already familiar equipment can open doors to the use of new and unfamiliar equipment. Demonstrations of multi-media presentations using familiar tools such as video cameras, overhead projectors and the addition of new software were presented.

Maximum use of the technology was aided by the creative housing of the equipment. Computers must be easy to use and to utilize, both in the lab setting and in the classroom. Scheduling should be easily accomplished and present positive experiences for staff. A combination of permanently housed and mobile computers was arranged to present a variety of all platforms for all teachers. During this period networking of the fifteen MSDOS machines and the addition of three additional machines was accomplished. This technical advancement required additional instruction in the use of the network in the lab setting. It also required that adjustments be made to allow the freedom of removing one of the networked computers for use with the television screen. These adjustments were all accomplished but then restricted all but one MSDOS machine to the lab setting. Additional machines are being sought for use in other locations in the building. Apple computers, all on mobile carts, were housed in individual classrooms through second grade and one computer per two classrooms through eighth grade. The need to have lab settings available for group instruction and individual machines available for classroom use was addressed. A larger physical arrangement of lab space was created and led to a more

positive lab experience while maintaining certain machines as mobile units. Both platforms will be available for the lab setting as all Apples computers are fully mobile and can be returned to the media center for group experiences.

Possible set up of small mini-labs within the elementary and middle school divisions was presented as a means to increase accessibility for integration into classroom use. Multiple curriculum use for these machines can occur on a sign out basis, encouraging use throughout the day beyond the lab setting. Teachers would have the technology lab available, with an emphasis on upper grade scheduling and the possibility of mini-labs to be shared between three grade levels. As future equipment is acquired the mini-labs will be pursued and classroom housing of computers will be accomplished.

Increased use of equipment was encouraged by a comprehensive list of available equipment, software and suggestions for its use in the classroom. General and curriculum specific software was listed with information concerning format and applicability. These lists were distributed in one of the initial whole group workshops. Teachers were encouraged to explore the software on their grade level and to share with teammates their professional impressions.

Individual computer logs were attached to each machine with a record to be kept of the user, what software was used and the time spent on the machine. These sheets served as record keeping sources for teachers monitoring independent student work, and a check of skills being demonstrated by students. Student time utilizing technology was easily recreated by checking logs for grade levels and the number of students involved in the activity. Software records were used to provide information as to the integration of the technology into curriculum areas. Logs reflect a variety of curriculum goals and a variety of applications to achieve those goals.

Teachers were given both a list of the dates of the inservice programs and a calendar with dates of workshops and presenters. Reminders were provided on a timely basis for workshops and any changes that needed to take place in the schedules. The

coordinator met with workshop presenters both before and after the workshops to check for any concerns they might have or that may have surfaced during their workshop. Help was provided in acquiring software, computers and direction of the workshop A publishing representative was invited to present software to the middle school staff and demonstrate newly developed instructional software.

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Chapter V

Results

Computers and related equipment were not being fully utilized and integrated in this school setting. A program was needed to encourage the use of computers and their integration throughout the curriculum and instructional process.

An inservice program was designed that would identify the needs and interests of the faculty members and include all members of the school community. A twelve week schedule of meetings was developed which incorporated workshops on specific software, age group teams, and whole group informational meetings. The initial meeting of the inservice program included copies of goals of the program, calendar of meetings and a survey of needs, skills and willingness to share computer skills.

The program incorporated factors which seem to lead to success for teachers. Grade specific needs were considered as well as whole school goals. Individual levels of confidence and capability were recognized and the program was adapted as needed to meet those levels. Personal needs of teachers were considered whenever possible in scheduling and carrying out goals of the program (Kozma & Johnson, 1992; Hurst,1994)). Schedules were flexible and planned to meet the needs of the participants.

Staff members were expected to state that their knowledge and ability to use computers had increased. A survey (Appendix C) was distributed to teachers at the last scheduled inservice meeting with a series of questions concerning comfort levels on the computers, time of use, availability of machines and future direction of training and computer use.

Twenty one surveys were returned with nineteen expressing an improvement in their comfort level in using computers. On the two surveys that did not indicate an increase in comfort level both had notations that they had felt very comfortable with the computers before the program was started. Attendance at the workshops also was used as a guide for success in meeting teacher needs and interest. Participation at both the whole group workshops and the smaller specific meetings was high. Each meeting had a majority of the assigned participants attending. Workshop leaders felt very positive in the attendance at their particular meetings.

Computer accessibility for all students and teachers was addressed in this program. Documentation provided from computer logs and sign out sheets showed a wide range of curriculum areas utilizing computer hardware and software. Technical problems prevented the use of the wide screen television until half way through the inservice program so its use was still fairly limited. It is encouraging to note, however, that it has been signed out by a kindergarten teacher, a fourth grade teacher, middle school science teacher, music teacher, media specialist and other teachers have requested software solely for group instructional purposes. Until this program this technical equipment had remained totally unused.

The integration of computer technology in all curriculum areas was encouraged and e[illegible]ce of use collected using computer logs and software sign out sheets. Software in math, social studies, language arts, research, publishing, art, keyboarding, music and problem solving were utilized during the [illegible]urse of this program. Teachers were positive in their reactions to the software and felt they would use it again. Familiarity with the software and its application is a milestone for teachers in their movement towards teaching children the applications of computer technology.

Utilization of computers should be a part of the curriculum throughout the day in the classroom. A goal of this program was that students would increase their computer use to at least one hour a day in upper grades and to one hour a week in pre-k through first

grade. While progress is being made, achievement of the goal is uneven. Presently kindergarten and first grade are reporting at least an hour per week, second grade, thirty minutes a week, third grade, four hours a week, fourth and fifth grade, two to three hours a week. Middle school grades six through eight are reporting three to four hours a week. While the actual goal has not been reached great progress has been achieved. In the teacher surveys fifteen of the twenty-one responses indicated that the use of computers in their classrooms had increased or would increase in the future.

Group cooperative work utilizing computer technology was seen at the outset of this program as a classroom goal for teachers. The use of computers, related equipment, and a variety of demonstration techniques were suggested to teachers as a means to develop this project. As the program developed however, the reaction of staff was reluctance to "jump in" as it were. Therefore, the expectation of carrying out a project was adapted to discussing the possibilities of a project in the grade level workshops. This time proved to be very productive as various ideas, and means of using the technology with students was investigated relative to specific age groups. This use of cooperative learning situations and computer technology in the classroom interested teachers and comments on the surveys indicated a desire to gain more information surrounding their use.

Computer literacy skills for children were identified as goals to be achieved by teachers participating in this program. As a result of this program checklists of skills (Appendix D) were to be developed by teachers appropriate for their grade levels. Responses from teachers indicated that as they themselves were unsure of computer skills they would find it difficult to create a checklist. In order to help diffuse these feelings preliminary lists were developed by the writer, utilizing discussion with various grade level teachers and the media specialist Lists were then presented to the teachers for their input after the program was well underway. The added familiarity with software, hardware and the initial list to work from created a positivite atmosphere and the lists were created. The

presence of parameters such as [illegible] through mastery, eased some of the concerns of teachers. The teachers of grades six through eight also determined that a general list encompassing all three years was more appropriate as many students enter at sixth grade and therefore may not have the same background as students who have attended the school for the elementary years.

Computer usage on an independent level is the ultimate goal of a computer literacy program, however the availability of open lab time in which to accomplish individual goals must be scheduled at appropriate times. Lab schedules now indicate that at least an hour and a half a day are available times for children to use computers for their own work. Student surveys (Appendix E) of the middle school students asked question concerning how they perceived the availability and use of the computer lab and use of computers. Fifty-five students responded to the survey and their responses contain interesting information concerning the technology use. Thirty-nine students felt their computer use had increased or remained the same. When asked about computer availability nineteen students responded the computers were more available and eighteen said they were less available. Eleven said it had stayed the same and seven were not at the school last year and did not respond. On further analysis of the sheets it became clear the students were responding as a grade level group. Negative responses to available time came from classes where the primary teacher is reluctant to involve technology in the classroom. A majority of the positive responses came from students whose primary teacher is a technology advocate and encourages its use. This in itself is a statement to the secret to technology literacy in the school setting. Enlisting teachers to the cause of technology use will absolutely increase its use in the instructional process.

Teachers also were asked to respond to the availability of computer technology and of the twenty-one responses, fifteen said the classroom housing of machines had helped somewhat or quite a bit in their use. The lab setting showed thirteen responses in the somewhat or quite a bit range. Of the remaining responses four deemed the lab as not

applicable to their age group. It would seem that the majority of teachers see the current housing of the computers as a positive addition to the technology program.

Discussion

Computer technology and its utilization present a challenge to education at this time. Preparing children to use that technology requires teacher training that is approached in an organized manner, with clear goals and freely given help and encouragement (Heath, 1990). Training must provide teachers with skills that match their own level of competence and the relevance for their grade level. This practicum attempted to meet those requirements, provide clear goals and outcomes for teachers, and to recognize their needs. The help and support needed for success to be achieved by teachers was also provided.

The results show that teachers reported positive growth in attitude concerning the use of computer technology in the educational setting. Attitudes towards technology can not be expected to change instantly and at the same rate for all teachers. Individuals continue to carry their own feelings concerning technology and its use, as can be seen by the student surveys. It will take continued exposure and experience with all instructors to advance the use of technology in the classroom. Education is changing, as it must, in order to meet the needs of the new generations of students and all educators will change to meet that challenge at individual rates.

Presenting positive literacy activities for teachers while recognizing their individual skill levels was a major goal of this practicum and results would seem to indicate that was achieved. Teachers consistently reported they felt more aware of the possibilities of technology and comfortable in its use. Final surveys also indicated the desire of more training in specific software and the benefit of "hands on" workshops one program at a time. The clear statement is that teachers are willing to learn if the training is presented in

a relevant meaningful way. This positive attitude and input will be put to use to build the next step in the technology training of teachers. The incorporation of teachers as trainers served to encourage other teachers as expected. A comment on the survey reported it was great to hear the "helpful hints" from another teacher before using the program in the classroom.

Workshops that focused on the various age groupings served to expand the understanding of that particular group of students and the specific concerns of the teachers involved. Early childhood teachers were concerned with the classroom management of teaching skills to students. The lab setting was not viewed as a viable alternative for their age group students due to supervision questions. During the early childhood workshop alternatives were discussed, such as parent volunteers supervising small groups, older students working on a tutorial basis with children, and the utilization of the computer and television for teaching experiences. The use of older students as tutors was an outcome that had been projected for the program. Middle school teachers are being approached about identifying skilled students and the means to schedule cross grade interaction of this type. Early childhood teachers also expressed an interest in upgrading Apple IIGS software to the same level as the MSDOS computers. Discussion followed concerning the limitations of the machines and the unavailability of the types of software that was desired for Apples. Teacher awareness of the technicalities of the computer technology was increased and their own level of knowledge was expanded. As the limitations of the Apples were explored interest in the means to use the MS DOS computers for instruction increased.

Elementary, grades 3 - 5, teachers were concerned with the classroom curriculum uses of the technology and the integration into an already full teaching day. All the teachers expressed the desire to utilize technology more but were struggling with time constraints. The opportunity for open dialogue in this way gave way to discussions concerning interdisciplinary planning and integration of skills in the classroom A variety

of software programs were shared and suggestions made as how they could become part of the school day already in existence rather than an additional subject area.

Middle school teachers also were concerned with time constraints in their class periods but were very interested in subject specific software to expand their teaching. Discussion took place concerning the availability and limitations of software programs and alternatives as to how they may be used. They were encouraged to use the television screen both in the lab and in their classrooms for interactive teaching. Use of the lab was discussed as supplementary to already scheduled computer classes for research, report writing and math practice.

As the practicum progressed it became clear teachers' confidence in their own skills was low. Asking for their own ideas concerning the use of computers resulted in few contributions to the resource book. As the program has been completed teachers have begun to feel that they do indeed have positive contributions to make to a resource book. Ideas are presently being collected and collated by the writer. It is an interesting process to watch the faculty in the building experience the same feelings concerning new skills as children do on a daily basis.

The development of the resource book for teachers has been slow but will continue as the knowledge and skill of the teachers increases. The addition of software for all age groups that uses CD ROM and interactive capability has ignited more and more interest in the computer as an instructional tool in the classroom. Even the most reluctant staff member was seen after school being instructed by a student in the use of Encarta, a media encyclopedia. The interest of teachers will be followed up by collating and distributing their suggestions for ways to use particular software in the classroom and teacher requested workshops on specific software that are more indepth. The first draft of the projected resource book should be available within a few weeks.

Technology training can not stop with awareness and software skills. Cohen (1994) discusses the need to develop a curriculum that utilizes the technology of the

computers, networks and telecommunications. Underlying this curriculum must be a firm foundation in interdisciplinary, collaborative and interactive learning. The continued training of teachers in the availability of technology must also include the means to achieve curriculum goals that best meets the needs of the learners.

It is hoped this practicum can be used as a basis for a local newspaper article and possible submission of an article for publication. The issue of technology in the classroom must be addressed now in order to prepare children for the twenty-first century. To best meet the future needs of children the needs of teachers must be met now. Districts, individual schools, and teachers can all benefit from the sharing of ideas and the variety of ways to increase computer technology integration into the instructional process.

Local interest in technology in the public schools has been the focus of recent newspaper reports. The county school district has currently rejected a consultant's recommendations for future technology needs due to financial cost and has been addressing the issue using staff members. One commentary ended with the thought "... in every group there's a few nerds who understand how they (computers) operate. They will be expected to pass along their knowledge to others in the same building."(Lunsford, 1994) This practicum has shown that the "nerds" are all of us and the knowledge we have to pass along is the best way for the incredible capabilities of technology to reach those who will need it the most, children. Depending on those competent teachers to pass along technology skills and information is certainly not enough. Organized and directed programs of teacher training must be developed and carried out. Schools must utilize the strength of their teachers and allow them the opportunity to expand and share their knowledge. Teachers must be given the chance to learn the skills that meet their own needs and the best way to share those skills with children.

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Recommendations

1. Communication with participants in the program is very important. Keeping participants well informed of schedules and requirements aided in the positive attitude concerning their participation.

2. In order for the program to be successful the administration must be viewed as supportive of the need for staff participation. Flexible scheduling requires the support of the administration and was important for maintaining attendance levels.

3. It is recommended that the training continue with workshops on particular programs. Teachers indicated the workshops were very good overviews and introductions but that more time was needed for mastery of more complex programs.

4. The next step in this technology plan should be the utilization of telecommunications and the training that is required in its use. A similar format for workshops for various age levels would be appropriate.

5. It is also recommended that a workshop focused on teachers utilizing the technology for their own use be presented. Giving teachers the opportunity to see the ways in which technology can ease their workload encourages them to learn and investigate.

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APPENDIX A
SURVEY OF TECHNOLOGY USE

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SURVEY OF TECHNOLOGY USE

As we continue to grow and advance in technology we would like to know how you feel about technology and its uses, how you use it now, and how you would like to see it used in the future. Please take just a few minutes to fill out this survey and return it to Jennifer Amico by April 22 Thanks.

Name_____

1. Do you use the computers in the MS DOS lab? In the Apple lab? In your classroom? About how many minutes per week? How long per student? Is this more or less than previous years?

2. Do you find computer time helpful for your students? Why?

3. What programs do you use most often? Why do you use these particular programs?

4. Would you like to have a computer(s) housed in your classroom?

5. Do you think that the classroom or the lab is the best use of the computers? Why?

6. With the addition of the large screen television for group instruction, what kinds of software do you think we need to acquire?

7. What training do you think you need as a teacher?

8. What do you think your students need most of all concerning computers? Technology in general?

9. What would you find most helpful in the area of technology that we can offer here at school or from other sources?

10. What do you see as the future of technology in the classroom, school, education?

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APPENDIX B
SURVEY OF TEACHER NEED

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Survey of Needs

Name:_____

This inservice is a teacher to teacher project. Everyone can participate both as a learner and as a teacher. In order to meet the multiple needs of the staff please answer the following questions and return the questionnaire to Jennifer Amico by Sept. 16 or she'll come looking for you!

1. What is your skill level?
   - ___ I'm really not sure how to do anything on the computers.
   - ___ I can produce a document using
     - Microsoft Works ____
     - Appleworks ____
     - Microsoft Publisher ____
   - ___ I can create a spreadsheet
   - ___ I can create a database

2. What do you feel comfortable teaching students?
   - ___ I can boot up software on the Apples
   - ___ I can locate and use programs loaded on the MS DOS
   - ___ I can use the CD Rom programs Please list below.
   - ___ I can teach selected software. Please list below.

3. Which of the following workshops would you be interested in attending?

___ Appleworks	___ Beginning Microsoft works
___ Magic Slate	___ Microsoft Publisher
___ Children's Writing&Publ.	___ Microsoft Works spreadsheets
___ Simulation software	___ Microsoft Works database
___ Primary math	___ Encarta
___ CD ROM Animals	___ Bookshelf, Almanac
___ Storyweaver	___ Mavis Beacon Typing
___ Basic Windows skills	___ Basic trouble shooting

   Please list any skills or software you are interested in learning.

4. Which of the above workshops would you be willing to help facilitate? You ALL have skills to share!

5. What day and time would you prefer meeting for the specific workshops?

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APPENDIX C
TECHNOLOGY INSERVICE EVALUATION

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TECHNOLOGY INSERVICE EVALUATION

As this particular phase of the technology inservice program is ending, we need to look both at what you have already accomplished, and your needs for the future. Please take a few minutes and complete this form before you leave today. Thank you for all your support, enthusiasm, and most of all, for the time you have taken to participate.

Jennifer Amico

Put an X on the line where you feel it is appropriate for you.

1. Before the training sessions I felt.....about using computers.

*				*
totally uncomfortable	a little uncomfortable	comfortable	more comfortable	very comfortable

2. After attending the sessions I feel.....about using computers.

*				*
totally uncomfortable	a little uncomfortable	comfortable	more comfortable	very comfortable

3. Do you feel the program:

Helped in software awareness	*				*
	no	a little	somewhat	quite a bit	a lot
Helped in improving your skills	*				*
	no	a little	somewhat	quite a bit	a lot
Met your needs in technology	*				*
	no	a little	somewhat	quite a bit	a lot
Increased your use of technology	*				*
	no	a little	somewhat	quite a bit	a lot
Increased your interest in computers	*				*
	no	a little	somewhat	quite a bit	a lot

4. You feel the amount of time you use computers :

Increased to ___ minutes per week	_____
Decreased to ___ minutes per week	_____
Will increase	_____
Probably won't change	_____

5. Has the current housing arrangement of computers helped in their availability, both in the classroom and in the lab setting?

Classrooms	*				*
	no	a little	somewhat	quite a bit	a lot
Lab	*				*
	no	a little	somewhat	quite a bit	a lot

6. Which aspect of the training program did you feel was most valuable for you and why?

7. What recommendations would you make for the next step in the integration of computer technology in our classrooms? (more training, curriculum development, etc.)

EDRS

APPENDIX D

SAMPLE CHECKLIST OF COMPUTER SKILLS

EDRS

Sample Checklist of Computer Skills

Third Grade - Seacrest Country Day School

Student Name_____

Skills	Date:	Date:	Date:	Date.
1. Can turn on computer				
2. Can enter Microsoft WORKS				
3. Can retrieve file from A drive				
4. Can enter 4 -5 sentences within assigned time period				
5. Can save work on A drive				
6. Can print a copy of file				
7. Can edit using delete, backspace, cut and paste commands				
8. Can exit the program				
9. Places hands correctly on home keys				
10. Demonstrates knowledge of the keyboard				
11. Uses both hands when typing				
12. Can locate articles in Encarta and find related articles.				

CODE: NE = No evidence .....teacher has to direct entire activity
D = Skill is developing.....teacher occasionally has to intervene
M = Skill has been mastered....student can complete skill independently

EDRS

APPENDIX E

STUDENT SURVEY OF COMPUTER USE

EDRS

STUDENT SURVEY OF COMPUTER USE

Please fill out the questions below by putting a check mark on any of the answers you agree with. You do not have to put your name on this paper but please mark your grade below.

Grade _____

1. Do you feel your computer use this year has:
   ____ increased?
   ____ decreased?
   ____ stayed the same?

2. Do you feel the computer lab is
   ____ helping you learn how to use the computer?
   ____ allowing you to find more research information?
   ____ helping you in your other classes?

3. When you need to use a computer:
   ____ you can get in the lab when ever you need to.
   ____ sometimes it is easy to get in the lab.
   ____ it is difficult to get in the lab.
   ____ the lab is unavailable when you need it.

4. In comparison to last year the computers are:
   ____ more available for use.
   ____ about the same.
   ____ less available.

5. Having a computer class has
   ____ helped my skills.
   ____ not changed my skills.
   ____ really not benefitted me at all.

6. If you could have anything you wanted in computer instruction, materials, or activities what would it be?