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Technology: an imperative in schools today

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TECHNOLOGY: AN IMPERATIVE IN SCHOOLS TODAY

by
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ABSTRACT

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Technology: An Imperative in Schools Today
May 1999
Dr. Theodore Johnson
School Administration

This study identified, prioritized, and fulfilled technological needs of faculty and staff at an elementary school. A list of technological skills in ascending hierarchical order was devised. From the list, a needs analysis was devised. Through the use of the survey, the intern was able to gleam a holistic view of the needs of the faculty. Due to financial constraints, the intern provided workshops to fulfill the needs. A comparison of skills both before the workshops and again afterward, showed a significant increase in computer competency in five of the eight indicators—specifically the ability to recognize hardware components, power up a computer, execute a word processor, access the Internet for information, and to send and receive electronic mail.

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Chapter 1

Introduction

Focus of the Study

Technology is of paramount concern in American schools today. Technology used to be retained for the select few who needed reinforcement or enrichment. However, in the 1980's, the use of computers assumed a greater role in American schools. With the advancement of technology in society, the demand for highly skilled workers also became important. Poor economic conditions during this time further fueled the desire for change. Schools were slow to respond to the call for the integration of technology. Moreover, technology became so important of an issue in education, that the federal and state governments offered perks and exerted pressure on schools to integrate technology.

Not only did the importance of technology in schools change over time but also its application. Schools initially employed the use of computers in schools for remedial and enrichment purposes; this was commonly done via drill and practice. However, with advanced technology and training, schools are more apt to use technology to access higher-level thinking. Students who are challenged to synthesize new information are using a much higher level of thinking than is reflected in the simple knowledge-level questions. Thus, the application of computers in schools has been extended to facilitate the development of higher level thinking processes.

In addition to changes in the importance and application of technology within schools, what defines educational technology has changed in recent decades too. Traditionally, when people referred to technology in the classroom, they were frequently talking about the use of radios, televisions, film strips, overhead projectors, tape recorders, and videocassette recorders. However, technology is constantly advancing and encompassing a broader scope of equipment. Currently, when educational technology is discussed it refers to the use of computer based applications such as compact disc-read only memory (CD-ROM), interactive audio and videodisk, local area networks (LAN's), hypermedia, and telecommunications. Thus, the use and type of technology in schools has grown in recent decades—just as its importance.

Technology also garners support from a large research base. Multiple studies on the integration of technology in schools have been completed which taunt the benefits for students, as well as teachers. However, despite benefits to its implementation, technology suffers from various problems. Teachers have been given conflicting advice, lack adequate technological training, need to shift roles from teacher-center to child-centered, and obtain adequate resources. Thus, barriers to implementation of technology in schools is hierarchical—some more important than others.

Purpose of the study

Since technology is beneficial, there should not be a question of whether or not to implement it, but what obstacles must be overcome in order to effectively implement it. The purpose of this study is to focus on one obstacle to implementation of technology in schools—adequate training. Teacher training is one of the most significant obstacles as

it is the classroom teacher who ultimately decides what is taught and by what method. If educators are trained, they will be empowered to use technology in the classroom.

This study will attempt to identify and fulfill needs of teachers to ensure technology is integrated into their teaching methods using action research, resulting in a description and provision of needed training. By completing this study, the intern will be able to identify and fulfill some of the technological needs of the faculty, encourage the use of computers in the classroom, communicate orally with staff to motivate them to use technology, conduct an effective technological inservice, and foster a climate conducive to the use of technology in the classroom--improving both student and teacher performance. Similarly, the administration will have an identification and provision of needed support services which will enhance staff and student performance. At this stage in the research, the technological needs will be defined generally as support services which 50% or more of the faculty feels are needed.

Definitions

Since technology has changed over the past few decades, clarification on what is connoted in this study will be delineated. Technology is computer-based instruction which may employ CD-ROM's, interactive audio and videodisc, local area networks, hypermedia, and telecommunications. CD-ROM's are compact discs containing data that can be read by a computer. CD's enable a lot of data to be stored on a small amount of space; therefore, the program can be very sophisticated, yet portable. Audio and videodiscs are optical discs which contain data that allow the computer to produce sounds and pictures. Audio and videodiscs allow students and teachers to hear and see events on the computer while interacting with the program. A local area network is a

communications network that serves users within a confined geographical area and consists of servers, workstations, a network, and a communications link, enabling schools to hook up to the Internet. The Internet is an interconnected computer network. Information from computers around the world travels on this network. Hypermedia is the use of data, text, graphics, video and voice. Telecommunications is communicating information over a long distance. Thus, hypermedia and telecommunications allow schools to use various forms of media to communicate with others beyond the bounds of the building. Thus, the scope of technology within schools is broad.

Limitations of the Study

Since the teachers will be given only one inservice, the breadth and depth of the workshop will be limited. Furthermore, due to financial constraints, the presenter will have to be either a volunteer or relatively inexpensive to retain. Another limitation that may be encountered is the type of available software. Existing hardware may also cause another problem. Depending upon the platform, size of memory and form of media, limitations may be incurred. For example, since the school is equipped with IBM hardware, programs designed for Mac cannot be executed. Similarly, if the computer lacks a CD-ROM, then an alternative means of input must be used. Furthermore, since this study will focus on the identification of needs within a relatively small school, the results most likely will not generalize to other schools due its specificity.

Setting of the Study

This study will gather data from nine teachers, one from each grade, kindergarten through eighth. Since performance is judged on a building-by-building basis, the intern chose her own to evaluate--Most Holy Redeemer in Deptford, New Jersey. This small

private school is located in a predominately middle class neighborhood with a current population of 260 students. This school first opened its doors in September 1959 with first grade. In May 1961, ground was broken for a new school and gymnasium. By September 1961, the school housed 331 students in six grades. Since then, the enrollment increased and decreased depending upon economic conditions and development of residential homes in the township. Currently, the school population is on the rise due to recent housing developments.

The student body consists primarily of Deptford residents who are Caucasian. The school does accept students who live outside the township, but only 23% of the students live in areas beyond Deptford. In addition, less than four percent (3.6%) of the students is from another ethnic background. Furthermore, the majority of students come from two income families which are intact. Only 14% of the students come from single parent homes; likewise, 27% of the students come from a single income family. The financial distribution may be attributed to the fact that the school is a private institution in which parents elect to send their children. Related to the financial factor, parents of minority children may not have the means to provide a private education even though they may desire to do so.

The faculty and administration is one of considerable experience. Except for one teacher, all the faculty and staff members have at least ten years' experience in his area. The one teacher who has less than ten years experience, was a teacher's aid in the school prior to obtaining her current position. The current administrator has held this position for the past three years, with many years' experience in the corporate world in the same capacity.

Technology in the school has been scant until this year. Over the past summer, the pastor, Fr. Neal Dante, along with volunteers from the community, made a vigorous effort to network the school. To date, all classrooms have cable in the classrooms, equipped with a television, and at least two IBM computers which will be interfaced into the Internet server, Snip, via the computer lab on the second floor. In addition, some classrooms are equipped with VCR's, overhead projectors, and cassette recorders. Even though the classrooms have computers, they lack CD-ROM's; therefore, data must be either installed on the hard drive or input using a floppy disk. However, the lab houses twenty IBM computers with Internet and CD-ROM capability which teachers can use. Thus, upon completion, the entire school will have Internet access right in the classroom.

Through a survey, the teachers will provide a list of technological skills they need to effectively use computers. Once each teacher has completed his survey form, indicating his needs, the data will be analyzed to determine common problems in which 50% or more of the faculty cite as a need. From the list of needs, a determination will be made as to which needs are the greatest and which of those needs can be fulfilled. The intern will attempt, through an in-service program, to fulfill the most pressing needs. Possible remedial workshops will be analyzed to determine if they can satisfy the needs. Those that seem feasible will be presented. A follow-up survey will evaluate the teachers' perceptions of the effectiveness of the in-service program. The results from the survey will be presented to the administration.

Significance of the Study

Since technology is an integral part of schools today, it must be taught effectively. For this to occur, the faculty and staff must be adequately trained. However,

before an effective inservice can be provided, the starting point, or how much each teacher already knows must be assessed. In addition, teachers technological needs must be evaluated. Through assessing how much knowledge teachers possess and what they perceive as a need, a strategy for improvement can be established. By training educators, schools empower teachers to use technology. Therefore, this study will begin at the basic step—identifying what the faculty deems as a need. After determining the faculty's needs, the intern can find a relatively inexpensive or donated workshop to inservice the faculty. Thus, the people who ultimately have the control over whether computers are instituted in the classroom, the teachers will be given skills necessary to integrate technology.

Organization of the Study

The remainder of this project will provide the reader with a literature review in Chapter 2, a design of the study in Chapter 3, presentation of research findings in Chapter 4, and culminate with conclusions, implications and further study in Chapter 5. The review of literature will begin with brief historical relevance of technology in schools, followed by research-based benefits and obstacles to integration of technology in schools—while accepting the social and political pressures that existed during the process. Chapter 3 will address five areas: a general description of the design, a description of the development and design of the two surveys that will be used, a description of the sample, description of data collection approach, and a description of the data analysis plan. It will attempt to answer "What type of evidence can be gathered to prove that the inservice improved the use of computers in the classroom?" Chapter 4 will depict the technological needs of the faculty and how those needs were met.

Chapter 5 will address the major conclusions and implications. Furthermore, it will state how the organization changed as a result of this project, and areas that need additional study.

Chapter 2

Literature Review

Technology is not just a fantasy—it is reality and currently a key element in schools. Technology ranked among the top six issues facing schools today (Northwest Regional Educational Laboratory, 1995). However, this was not always the case. During the 1920's-1930's, radio, television, and teaching machines, the newest technology at that time, had relatively little impact on education. In the 1940's, the overhead projector was introduced—making the greatest impact on education, according to Mehlinger (1996). Today, this teaching machine is still used widely in classrooms. Technological advancement during the 1950's-1960's was scarce, despite the fact that billions of dollars were spent. During this span, the government attempted to improve education through the use of technology. The results were undesirable: machines were constantly being upgraded and replaced; programs lacked quality; costs were phenomenal; school leaders lacked technological expertise; teachers' classroom practices remained constant—lacking a desire to change the status quo.

These attempts continued in the 1970's. Major corporations, such as Apple, IBM, and Control Data seized the opportunity to get into the market of schools via fashioning their latest software and hardware around current educational practices. In fact, Apple went as far as to offer a tax-deductible donation of microcomputers to schools and a drive to make students computer literate. However, the efforts during this time were relatively futile.

During the 1980's an aggressive movement to integrate technology in schools began. This collective effort was initiated with the report, A Nation at Risk(National Commission on Excellence in Education, 1983). This report delineated education in American as strewn with flaws--calling for improvement in five major areas: curriculum standards and expectation, time, teaching, leadership and fiscal support. The nation was declared at risk because Japanese and German competitors took America's lead in commerce, industry, science, and technological innovations. Thus, the report claimed that the educational process was failing due to a "rising tide of mediocrity" (National Commission on Excellence in Education, 1983, p. 14). Mecklenburger (1988), claimed that this report initiated criticism of the American education system. Furthermore, he stated that the people in this country were suffering due to uncertain economic trends—adding willingness to blame the American education system for failure. The poor economic conditions of this time fueled the desire for technology. Thus, as technology advanced, social institutions and demand of skills changed—reflecting the nation's growth. Moreover, since there was a demand for highly specialized workers in electronics, communications and computer technology, institutions were expected to meet these demands. However, schools were the slowest of all organizations to fulfill those needs. Within weeks of the report's debut, school districts throughout the nation outlined remedial efforts, based on the recommendations in the report. Efforts were pioneered in the areas of academic standards, science and math, accountability, length of the school day and year, and technological education. The report viewed computer literacy as a new basic skill(National Commission on Excellence in Education, 1983). Despite the fact that the nation offered support to integration of technology in schools,

they remained highly resistant to any substantial change. Snider (1992), in his article, "Machines in the Classroom," professed that implementation of technology was the biggest challenge faced by schools.

In 1986, Congress asked the Office of Technology Assessment (OTA) to identify potential benefits and obstacles to the use of technology in schools(US Congress Office of Technology Assessment, May, 1994). In order for educators to integrate technology into schools, they must gain the skills and knowledge, shift roles, and have adequate resources. Two other obstacles educators faced were inadequate access to computers and conflicting advice regarding teaching technology. At that time, there was approximately two million computers in schools—a density or ratio of one computer for every 30 students. In addition, with more than 2.8 million teachers in public and private kindergarten-through-twelfth grade schools, adequate training for teachers was of primary interest. Since the educators are really the people who oversee the daily work of students, it is those individuals who really needed adequate training in technology because it is ultimately their decision on what is taught and by what means. If teachers do not feel comfortable with the use of computers, they will most likely ignore employment of the machines. Thus, teachers need to become empowered to teach technology.

For example, some educators have a computer which is Internet accessible yet remains dormant due to lack of knowledge. This is a relatively easy problem to resolve by providing the needed in-service. Furthermore, the students in her classroom would be deprived of an entire year of online services in school just because of her ignorance. That is time that cannot be given back to the child. Furthermore, the government

encourages schools to use the Internet via making it easier to connect. Discounts enacted by the Telecommunications Act allow more schools to gain Internet access(Telecommunications Act, 1996). Research also seems to support the use of the Internet in schools. Studies done in 1996 indicate that students who use the Internet are better able to gather, organize, and present data, complete multimedia projects, and get remedial help(Center for Applied Special Technologies, 1996). Despite support of educational technology, if teachers are expected to teach using the computer, they must also have the adequate training. Research supports the theory of adequate training, not the newest hardware and software, as the fundamental difference between a successful and unsuccessful technological program(Office of Technology Assessment, 1995; Schofield, 1995).

Even though the integration of technology in schools is beneficial, it is not easy. Another obstacle educators have to overcome is one of changing roles. According to Sheingold & Hadley (1990), using technology changed teachers' methods. Traditionally, teachers were viewed as wise leaders. The classroom was primarily teacher-centered. However, with the integration of computers into education, teachers turn the responsibility of education over to students, equating teachers as facilitators of the process(Riel, January 12, 1994). In addition to changing to a student-centered classroom, educators need to feel comfortable with the machines and have adequate resources to implement them into their teaching repertoire.

Another common problem cited in the report is one of access—computers in schools were frequently located in inconvenient places. This limits teachers' ability to utilize existing technology. Further confounding the move of technology in schools,

educators were frequently given new advice (Office of Technology Assessment, 1995). In 1983, teachers were instructed to teach BASIC—a computer language. A year later, teachers were advised the best language to teach is LOGO—improving thinking skills. To individualize instruction and improve test scores, in 1986, teachers were told to use drill and practice. In 1988, teachers were told to use computers for word processing documents—improving writing skills. However, these efforts met with failure. Furthermore, it was during the 1980's that the term "computer literacy" gained definition Nobel (1996). As a result of a initiative to make American students "literate," states invested heavily in purchasing computers for schools. Technology was thought to help teachers structure, organize and enhance educational activities. Nobel (1996) stated that lack of quality in the products did little to advance technology within schools.

However, when achievement did not improve during the 1980's, the following decade sought to create a major restructuring. Several areas were focused on during the 1990's: curriculum and instruction, authority and decision making, staff responsibilities and roles, accountability, and technology. Technology was viewed as an essential tool for Americans (US Congress, May 1994). The ability to use technology has been recognized as an indispensable skill as the Secretary's Commission on Achieving Necessary Skills (SCANS) said, "Those unable to use...(technology) face a lifetime of menial work"(U.S. Department of Labor, June 1991, p.15). As software and hardware became more powerful and affordable, its influence was also expected to grow(US Congress, May 1994). For example, in 1993 it was estimated that more than 12 million people in America used electronic mail and other online services(Eckhouse, 1993).

Technology has become a major issue in education today—gaining prominence at both the state and federal levels. In fact, technology has become such a driving force behind education, that the U.S. Department of Education established an Office of Educational Technology for the first time in history. This office devised a national technology plan for education (Roberts, 1996). Furthermore, the Clinton Administration announced its plan to build a national electronic infrastructure to increase the ability of schools to communicate with outside resources. Furthermore, revisions made to the Eisenhower Professional Development Program emphasizes federal professional development of technology in core subjects(P.L. 103-382). Mehlinger (1986) stated that schools would not be able to resist the pressures to implement technology. At the state level, all but seven states established requirements or recommendations for integrating technology into curriculums. In addition, 19 states require seniors in high school to demonstrate computer competency before graduation(Andersen, Nov. 15, 1994). New Jersey's second cross-content workplace readiness curriculum standard requires all students to use technology and other tools(New Jersey State Board of Education,1996). Thus, technology has become an integral part of schools during the 1990's.

Educational technology has grown at a rapid rate. Research indicates the number of microcomputers used by the nation's schools has increased from 50,000 in 1980 to over five million in 1995(West,1995). Technology is here to stay, and students need to know how to use it to be competitive in the twenty-first century. As the importance of technology increases in society, so too will the demand for technological expertise. Elementary schools frequently use computers for enrichment and to reinforce basic skills. However, this is commonly done through networks in which students are able to

work together and share information. Unfortunately, when labs, rather than classroom computers, are used in schools, students' accessibility is limited. Clements and Nastasi (1992) stated that the amount of improvement is comparable to the actual time students spend on the computer. Furthermore, Mergendoller (1997) stated that individualized instruction, either remedial or enrichment, is best provided by drill-and-practice instruction. Becker (1990) said this is predominately the type of software used in schools. However, this traditional method of computer aided instruction has recently been expanded to include complex multimedia products and advanced networking—allowing students to use advanced methods. For example, the Apple Classrooms of Tomorrow (Dwyer, 1994) project provided teachers and students with computers. The students involved in the project showed the ability to explore many types of information, develop social awareness skills, self confidence, effective communication skills, become independent learners, and effectively use technology on a regular basis. Thus, the students advanced skills were measured; eventually, this may become the main focus of instructional technology.

Despite obstacles, research at this time indicated that use of technology was beneficial. After 30 studies, Becker (1990) concluded, "students generally do at least somewhat better using ILS (integrated learning systems) than they would be expected to do"(p. 39). Dwyer (1996) seems to support Becker's study. In his article "We're in this Together," Dwyer (1996) stated that technology can add to the educational experience via becoming part of a comprehensive program. Part of this plan, is to adequately prepare teachers and administrators. Sheingold and Hadley (1990) state that seven years of administrative support, staff development, and planning time are necessary to fully

integrate technology into a program. In another study, a researcher, James Kulik (1994), analyzed the effectiveness of computers in education. He used a meta-analysis approach that allowed him to compare more than 500 individual studies of computer-based instruction. He summarized his findings by stating that students learn more in less time and develop more positive attitudes towards learning. Similarly, in another study, the Software Publishers Association released a report that analyzed 176 studies conducted on the effectiveness of technology in schools. This report concluded that students, who were exposed to environments where technology was prevalent, improved achievement in all subject areas and had a more positive attitude toward learning. Furthermore, studies summarized by Bialo and Siven-Kachala (1996) reaffirm the theory that students who use technology benefit in several ways; they feel more successful in school, more motivated to learn, demonstrate greater self confidence and self esteem. Integrating technology in a school is neither easy nor cheap, but it is imperative. As Mehlinger (1996) stated, "Transforming schools through technology will work. But it will take time, and it will be expensive"(p. 406).

Implementing technology in schools not only benefits students, but also teachers. Educators have many functions to complete in one day, and some of their work can be automated via a computer. Research reveals that technology increases productivity and professionalism(Rockman, S., Pershing, J. & Ware, W., 1992), autonomy(Cannings,T.R. & Polin, L., 1987), and confidence(Rockman, S.& Sloan, K.R., 1993). By automating repetitive functions, educators can devote time to more meaningful tasks. For instance, rather than spend endless hours computing averages on a calculator, they could invest in a software package that does it in mere seconds. In addition to saving valuable time,

technology can increase teachers' professionalism. For example, educators can create almost any type of correspondence they may need. Newsletters, tests/quizzes, permission slips, calendars, thank you letters, and form letters are just a few of the professional documents teachers use on a regular basis and can be professionally drafted on a computer. Correspondingly, as teachers' productivity, professionalism, and autonomy increases, so does their confidence. Thus, teachers, as well as students, benefit from the implementation of technology.

Since technology is beneficial, there should not be a question of whether or not to implement it, but what obstacles must be overcome in order to effectively implement it. The purpose of this study is to focus on one obstacle to implementation of technology in schools—specifically adequate training. This study will attempt to identify and fulfill needs of teachers to ensure technology is integrated into their teaching methods using action research, resulting in a description and provision of needed training. By completing this study, the intern will be able to identify and fulfill some of the technological needs of the faculty, encourage the use of computers in the classroom, communicate orally with staff to motivate them to use technology, conduct an effective technological inservice, and foster a climate conducive to the use of technology in the classroom--improving both student and teacher performance. Similarly, the administration will have an identification and provision of needed support services which will enhance staff and student performance. At this stage in the research, the technological needs will be defined generally as support services which 50% or more of the faculty feels are needed.

Overview Question and Sub questions

This research intends to answer the following questions:

Overview Question

What do teachers need in order to improve performance via technology?

Sub questions

What support services do 50% or more of the faculty deem as necessary to effectively employ computers in their classrooms?

How can these support services be provided?

Which in-service can fulfill teachers' needs?

Chapter 3

Design of the Study

General Description of the Research Design

In order to ensure technology is integrated into their teaching methods, administrators need to know what resources and skills the teachers need to implement the use of computers in the classroom--the initial phase of this project. Once a needs analysis was completed, the intern provided workshops to better equip educators to teach technology. In-service programs were provided to fulfill those needs. Once each teacher completed his survey form, indicating his needs, the data was analyzed to determine common problems. Possible remedial workshops were analyzed to determine if they could satisfy the needs. Those that seem feasible were presented.

By completing this study, the intern was able to identify and fulfill some of the technological needs of the faculty, encourage the use of computers in the classroom, communicate orally with staff to motivate them to use technology, conduct effective technological inservices, and foster a climate conducive to the use of technology in the classroom--improving both student and teacher performance. Similarly, the administration has identification and provision of needed support services, which enhances staff and student performance.

Description of the Development and Design of the Research Instruments

In order to assess the needs of the faculty and staff of the school, the intern reviewed, evaluated, and prioritized technological skills in ascending hierarchical order.

The lowest level of skills focused on the faculty and staff's ability to identify the hardware components of a computer. As the needs assessment increased in difficulty, the faculty and staff were questioned regarding their ability to boot up the computer, use the computer to perform a word processing document, next use spreadsheets, then use paint and draw programs, create slide show presentations, and finally navigate the Internet and use electronic mail. From the list of skills, the survey was designed (Appendix A).

The survey was constructed in a simple yes/no fashion—enabling educators to respond to each question in an expedient manner, while providing the intern with a holistic view of the faculty's and staff's ability to use technology.

Description of the Sample

This study was conducted at an elementary school, using ten teachers--one from each grade, kindergarten through eighth grade. Since performance was judged on a building-by-building basis, the intern chose her own to evaluate--Most Holy Redeemer in Deptford, New Jersey. This small private school is located in a predominately middle class neighborhood with a current population of 250 students.

The faculty and administration is one of considerable experience. Except for one teacher, all the faculty and staff members have at least ten years' experience in his area. The one teacher who has less than ten years' experience, was a teacher's aide in the school prior to obtaining her current position. The current administrator has held this position for the past three years, with many years' experience in the corporate world in the same capacity.

Description of the Data Collection Approach

The survey was circulated to twelve people. Out of the twelve people, eleven surveys were returned. The needs assessment of the faculty and staff revealed a clear line of demarcation of skills among faculty and staff members. While 64% of those surveyed knew the hardware components of the computer and how to boot it up and 82% knew how to execute a word processing document on it, a relatively small number (27%) knew how to use a spreadsheet and a draw/paint program. An even smaller percentage (18%) of faculty and staff members was able to access the Internet for information and send and receive electronic mail. Furthermore, the survey revealed that no one (0%) could devise a slide presentation on the computer. After analyzing the data, the intern decided to provide two, rather than one inservice workshop, to instruct the faculty and staff members. After reviewing the range of technological skills, the intern decided it was fruitless to inservice teachers on advanced skills when there was an obvious need to address lower skills first. For example, since the faculty was unable to turn on the computer, it was useless to expect them to use the machine to prepare a paint document.

Description of the Data Analysis Plan

The effectiveness of the workshops was assessed in a post-workshop survey of teachers, determining the effectiveness of the in-service on teachers' performance. The post-workshop survey was structured similar to the needs survey. The teachers were again asked to rate their technological skills based on the hierarchy. A comparison of the two surveys was made to determine if the teachers' skills increased or remained the same. The results from the comparison will be presented in the next chapter—Chapter 4.

Chapter 4

Presentation of Research Findings

A survey was circulated to 12 members of the faculty and staff of Most Holy Redeemer School. Eleven of the surveys were returned. A needs assessment revealed a clear indication that some members knew little about computers while a couple of individuals had some technological experience.

Results from the needs survey

Ability to recognize hardware components	64%
Ability to power up a computer	64%
Ability to execute a word processor	82%
Ability to use a spreadsheet	27%
Ability to use a draw/paint program	27%
Ability to create a slide presentation	0%
Ability to access the Internet for information	18%
Ability to send and receive electronic mail	18%

Thus, the intern decided that two, rather than one workshop, would better meet the needs of the group. Furthermore, since finances were limited, and the intern had the ability to host the workshops at no cost to the school; she did. The workshops were held on two consecutive afternoons and offered to all the faculty and staff members on a volunteer basis. Eleven members attended both workshops.

Since 18% of the faculty and staff could not identify the hardware components of the computer nor boot it up, the first workshop focused on the basics of computers—naming the parts, turning it on, and writing a document on a word processor. The intern began the first session by reviewing the names of the parts of the computer and their functions. This was followed by instruction on how to turn on the computer. The final stage of this workshop showed the group how to begin a new document, change font size, color, style, add tabs, set margins, change spacing, format a document, save and print the report. The group was led through a hands-on fashion using the computers in the lab which employ Microsoft Word. Some of the faculty members (18%) who knew how to begin a word processing document, wanted instruction on how to wrap text and insert graphics. Thus, the workshop became faculty driven. At the end of the session, the faculty was encouraged to stay longer experimenting with their new skills. A post-technology survey was given to each participant and completed before he left (Appendix B).

The survey revealed that 100% of the participants could identify the hardware components of a computer, turn it on, and execute a basic word processing document. Thus, the first workshop met its goals.

Results from the first post-workshop survey

Ability to identify hardware components	100%
Ability to power up a computer	100%
Ability to execute a word processor	100%
Ability to use a spreadsheet	27%
Ability to use a draw/paint program	27%

Ability to create a slide presentation	0%
Ability to access the Internet for information	18%
Ability to send and receive electronic mail	18%

At the inception of this project the intern was going to progress up the hierarchy of skills; however, an informal assessment of the faculty reflected an interest in accessing the Internet for information and sending and retrieving mail. Thus, this was the focus of the second workshop. This workshop began with a general explanation of how the Internet works—through the use of a modem. Then search engines were explained. The intern showed the faculty how to switch from one engine to another—discovering the results gained from employing the use of different engines. The intern provided the faculty with an Internet lesson plan sheet, hundreds of web sites designed for teachers, and a glossary of terms they may encounter as they navigate the Internet.

Through a hands-on activity the faculty was encouraged to search for something of personal interest. Some of the faculty members chose to search clothing stores (30%), while another decided to look at stocks, another at her favorite supermarket for coupons, and the rest (50%) at various educational topics that they could employ within the classroom.

After an hour and a half of exploring the Internet, the faculty was led through the steps of establishing an electronic mail account through Hotmail—a free e-mail service provided by Microsoft. The importance of remembering the user's log-on name and password was stressed. The fact that passwords are case and space sensitive was reviewed. Safety factors were discussed. The faculty was cautioned regarding the type

of information sent through the Internet. The faculty immediately received a welcoming letter from the staff of Hotmail. Furthermore, the faculty was encouraged to write to others within the group. Ninety percent of the group sent mail during this session. The second session was closed with an invitation to ask for individual help with any aspect of the computer on the needs assessment. Each member completed a survey before she left the room.

The surveys were counted and tallied. A review of the responses showed that 90% of the faculty felt competent in using the Internet to access information and send and retrieve mail. Furthermore, 80% of the faculty felt able to use the Internet to access different cites to locate lesson plans, factual information, and guide students through research. Thus, this workshop met its intended goals.

Results from the second post-workshop survey

Ability to identify hardware components	100%
Ability to power up a computer	100%
Ability to execute a word processor	100%
Ability to use a spreadsheet	27%
Ability to use a draw/paint program	27%
Ability to create a slide presentation	0%
Ability to access the Internet for information	90%
Ability to send and receive electronic mail	90%

A comparison of the surveys revealed significant changes in five of the eight indicators. For example, in the first survey only 64% of the faculty and staff could

identify the hardware components of the computer and how to power it up (indicators one and two), and the second survey showed that 100% of the faculty could perform these functions—a change of 36%. In addition, there was an 18% increase in the members' ability to perform a word processing document (indicator 3)—up from the original 82%. Similarly, there was a 72% increase in the faculty's ability to access the Internet for information and to send and receive electronic mail (indicators seven and eight). Since indicators four through six were not addressed in the workshops, there was no apparent change in the faculty's ability to use spreadsheets, paint and draw programs nor slide presentations.

Comparison of the surveys

	Needs Survey	Survey one	Survey two
Ability to identify hardware components	64%	100%	100%
Ability to power up a computer	64%	100%	100%
Ability to execute a word processor	82%	100%	100%
Ability to use a spreadsheet	27%	27%	27%
Ability to use a draw/paint program	27%	27%	27%
Ability to create a slide presentation	0%	0%	0%
Ability to access the Internet for information	18%	18%	90%
Ability to send and receive electronic mail	18%	18%	90%

Chapter 5

Conclusions, Implications and Further Study

Technology is here to stay and educators must learn how to use it in order to teach it to students. This study demonstrated that while educators may have some basic knowledge regarding technology and its use within the classroom; however, their ability to use it varies greatly. While this study focused on one particular school and its needs—it most likely reflects the problem in many other schools. Educators seem interested in learning how to use the newest technology, but have never been given the skills necessary to succeed. In order for administrators to become facilitators of technology, they must first determine the needs of their faculty. Once that has been accomplished, a means to fulfill those needs must be devised and implemented. Furthermore, leaders can motivate their faculty and staff by providing a hands-on learning environment where teachers are lead through the actual steps of using technology rather than just listening to the benefits of it. This study provided the faculty and staff with real, actual practice, which seems to have diminished some of the fears and inhibitions associated with using technology within the classroom. Furthermore, educators were able to experiment with computers—gleaming some of the possible benefits for themselves as well as, their students.

In conclusion, some of the educators who never turned on a computer until involved in the workshops were amazed at the ease and facility of projects through use of the machine. Thus, using the computer diminished many preconceived notions. By

exposing the faculty to technology, those that were never interested in using computers now had an appetite for its ability. Some of the faculty members never touched a computer until the workshops. Just by using it in the sessions, they may be more inclined to experiment on their own. As a result of the workshops, those with no experience, could at least name the parts of the computer, boot it up, use a word processor, navigate the Internet for information, and send and retrieve electronic mail. Furthermore, these individuals became confident using the computer in the classroom.

The implications of this project suggest that the faculty members may not use the computer on a daily basis in their rooms, but when students ask them if the have ever used the Internet, they can state that they have experience and can give direction regarding its use. Thus, they have an understanding of the great wealth of information available on the Internet.

Indeed the faculty has progressed from being computer illiterate; however, the intern recommends a multi-semester or even multi-year inservice on technology integration to motivate the faculty and provide them with the skills necessary to effectively integrate technology into the classroom—benefiting the faculty and ultimately the students. If this project had more time, several more workshops could have been provided. Thus, an area to consider for further study is not only to expand the inservice of technology but also how should that extension is offered—what should be included to maximize efficiency.

As a result of this study, the intern learned how to identify and fulfill technological needs of a faculty and staff. In addition, the intern employed motivational techniques to facilitate members of the faculty to experiment using technology. For

instance, by showing the faculty products and services available on the Internet, the members reported the desire to personally seek out information.

Areas of further study should include: using help, installing and running programs, managing files, editing, sorting, and saving documents, formatting, changing the appearance of a document, using tables and adding borders, working with long documents, sharing data with other users, assembling documents with mail merge, customizing programs, backing up and restoring files, adding indexes and table of contents, compressing folders and disk space, and switching programs.

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Appendix A

Needs Survey

SURVEY TO DETERMINE TECHNOLOGICAL NEEDS

1. I know the hardware components of a computer. Yes/No

2. I know how to boot up a computer. Yes/No

3. I know how to use a word processing program. Yes/No

4. I know how to use a spreadsheet. Yes/No

5. I know how to use a draw/paint program. Yes/No

6. I know how to devise a slide presentation on the computer. Yes/No

7. I know how to access the internet for information. Yes/No

8. I know how to use electronic mail. Yes/No

Appendix B

Post-inservice Survey

POST-TECHNOLOGY INSERVICE SURVEY

1. I know the hardware components of a computer. Yes/No

2. I know how to boot up a computer. Yes/No

3. I know how to use a word processing program. Yes/No

4. I know how to use a spreadsheet. Yes/No

5. I know how to use a draw/paint program. Yes/No

6. I know how to devise a slide presentation on the computer. Yes/No

7. I know how to access the internet for information. Yes/No

8. I know how to use electronic mail. Yes/No

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