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Training Teachers to Use Technology in Teaching

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Abstract

The purpose of this study was to help teachers understand the ease and importance of utilizing the technology that is available to them and train them in using that technology on a regular basis, thereby enabling them to establish effective routines that would enhance their daily teaching practices. The primary goal of the research study was to provide untrained or under-trained teachers at KCA with adequate training in the use of technology. Another goal of the project was to allow teachers to realize the impact that the use of technology could have on their daily teaching, classroom management, and record keeping routine. Implementing a regular training program and creating a support system would allow teachers to become comfortable utilizing the resources that are available to them in their daily classroom and teaching practices. Consequently, teachers would realize an increase in the amount of time they are able to spend in developing and implementing more effective lessons and classroom activities.

The solutions that were selected as part of the implementation phase of the action research project were: (1) to provide regularly scheduled training opportunities for teachers in the use of the online grading system, the interactive SMART board, and other software applications that are found to be helpful to teachers in their everyday routines (including Microsoft Word, Excel, PowerPoint, and KidPix by RiverDeep); and (2) to provide ongoing support to include after-school, on-site availability as well as evening and weekend assistance via e-mail and telephone.

At the conclusion of the project, administrators reported that all teachers were able to use the online grading system as required to post student grades and attendance, view and print progress reports, and provide an opportunity for parents to view their children's grades online on a weekly basis. The teachers were regularly observed using the available technological tools for all other daily and administrative duties as trained in the project workshops. Additionally, teachers were observed using technology more often. Many teachers and students also reported the frequent use of technology in the classroom. As a result, many students became more involved in their learning than previously reported as their daily classroom activities were enhanced through the use of technology while teachers realized more efficient daily routines and improved school to home communication.

Chapter 1: Introduction

Problem Statement

The problem was that very few of the teachers in Kearny Christian Academy (KCA) were using the technology that is available to them for assistance in their daily teaching, classroom management, and record keeping routine. This limited the time they were able to spend developing and implementing more interesting and effective lesson plans and classroom activities.

Purpose

The purpose of this study was to help teachers understand the ease and importance of utilizing the technology that is available to them and train them in using that technology on a regular basis, thereby enabling them to establish effective routines that would enhance their daily teaching practices.

Description of the Community

The community in which the school operates is located in the New York City Metropolitan area, within minutes of many of the nation's economically disadvantaged areas in which gang violence, street crime, and poverty are widespread. Many students travel over five miles to attend the school. Most households in the school are at or below the national poverty level. Many of the junior and high school students are children whose local public and private schools would no longer allow them to attend.

Description of the Work Setting

The school in which the study was conducted is a small, private Christian academy serving grades kindergarten through twelve. The student body consists of a variety of cultures and socio-economic backgrounds. The student body consists of over 80% of

students from non-English speaking households. There are approximately 180 students attending the school from kindergarten through grade twelve.

The school has recently been experiencing rapid growth and many classrooms have reached their student-teacher ratio limitations. The school staff currently consists of nine full-time teachers, four of whom are state certified. The remaining full-time staff members have been trained by the school or are pursuing degrees in education and state certification. Additionally, the school employs five part-time teachers and two full-time teaching assistants.

The school's mission is to provide academic and Biblical training to a multicultural and diverse student body while simultaneously helping each student build a solid foundation on Christ in preparation for their life journey. Parental involvement is highly encouraged and student academic achievement is the primary focus in conjunction with spiritual development. The governing board and staff are firm believers in each child's success, and preparation for college and future achievements is a core component of the educational experience.

The implementation of the research project occurred during scheduled teacher training sessions with all full-time teachers, teaching assistants, and selected part-time teachers.

Writer's Role

The writer serves as first and second grade teacher, elementary technology teacher, technology department and network administrator, staff development coordinator, and curriculum development assistant. The writer is responsible for providing ongoing technology support to all staff members as well as providing and scheduling all technology

training of staff members. Additionally, the writer is responsible for teaching technology classes for the elementary level students. The writer's responsibilities also include assisting in the scheduling and administration of all other staff development and training, as well as assisting in the research, development, and acquisition of curriculum and curriculum changes.

Chapter II: Study of the Problem

Problem Description

Throughout the first twenty of its twenty-five years of operation, KCA was mostly comprised of students whose families attended its parent church, City of Hope International Church. Over the past few years, however, KCA has seen an influx of students from the surrounding communities and churches to extend as far away as twenty miles. In the last two years, the school population has become extremely diverse and the daily classroom and administrative responsibilities placed upon each classroom teacher have increased dramatically.

There was a time when teachers could manually and effectively perform such administrative duties as keeping accurate attendance records, preparing progress reports and report cards, preparing meaningful lesson plans and activities, and engaging in regular communication with parents. In the past few years, however, performing these duties without the assistance of any technological tools had become impractical. The resulting demands of an ever-increasing and diverse student population limited the time teachers were able to spend developing and implementing more interesting and effective lesson plans and classroom activities.

Although the school administration had recently purchased a variety of technological tools to assist its teachers in these areas, very few of the teachers in KCA were using the technology that is available to them for assistance in their daily teaching, classroom management, and record keeping routines. Additionally, the administration had been unable to provide the teachers with the type of training and support necessary to effectively implement the use of the available technology tools in their daily teaching and administrative

duties. This resulted in a lack of teacher interest for some and, for others, exposed a fear of stepping into the realm of the unknown.

Problem Documentation

At the beginning of the 2005-2006 school year, the teachers at KCA were informed that the school had adopted an online grading system. Many teachers panicked and insisted they were unable to complete the related duties, expressing feelings of fear and frustration. Then, upon learning that the school had also purchased an interactive SMART board for use in daily classroom lessons, many teachers expressed discomfort and skepticism about their ability to use the board and its accompanying software applications. Although many teachers had expressed concerns about their students' apparent inattentiveness and disinterest in class lectures and the lack of interesting activities currently found in the curriculum, they were still reluctant to apply the use of the school's technological resources in their individual classrooms.

Through observation of and discussion with the teachers at KCA, it was determined that the teachers were uncomfortable with the use of technology in the classroom and in their personal lives. Some teachers reported a fear of learning new technologies and others expressed apprehension at even the thought of using the available technological tools inside and outside of the classroom. Even as these same teachers had reported that their students repeatedly express disinterest in the lecture-based format of the curriculum, complain of boredom, and express their inability to focus and become involved in their learning, they remained hesitant and anxious over the use of technology in their daily lives.

Additional observations and interviews indicated that teachers were spending many hours each week manually completing tasks that would have been expedited through the use

of technology. The teachers reported an average of at least five or more hours each week spent on the manual recording of attendance as well as the manual recording and averaging of student grades. Further, the time spent manually writing and preparing lesson plans and lectures exceeded, on average, five hours each week.

Ongoing communication with parents and families is a key component of effective classroom management. Teachers had reported that overall student progress and success was declining while incidents of misbehavior and rebellion were increasingly evident, which may have been a direct result of the lack of ongoing and effective communication between school and home. According to the administration and teachers alike, family and parent communication consisted almost entirely of missed and unreturned telephone calls and voice messages, which had become an ineffective and unproductive means of communication. Although many parents had indicated that their preferred method of communication was electronic mail, most teachers at KCA reported an unwillingness to use this form of communication. According to the teachers, this unwillingness was due to a lack of training in this area as well as a perceived inability to use the school's computers for this task. Interviews and discussions with the teachers indicated that more training in the use of e-mail was desired, the school's computers needed to be more accessible, and a system of ongoing and obvious support was needed.

Literature Review

The society of today is one in which the use of technology is becoming a fact of life. As a result, "teaching and learning have changed as the use of technology becomes more prevalent" (Charp, 2002). According to current research, "approaches to teaching must address the reality that we live in a world filled with rich visuals and audio, communicated

over many digital devices" (Looney, 2005). Students must be prepared to enter the technological world in which they live upon graduation.

Additionally, younger students should be exposed to the technological tools that make future learning more effective and meaningful, providing them with the necessary skills to succeed as more technology is used in their daily classroom routines. Sonia Livingstone, a professor of social psychology at the London School of Economics and Political Science, stated that "there is plenty of need for educational efforts to teach kids technology skills" (The Chronicle, 2005). Finally, teachers must understand that "technology brings immediacy to knowledge acquisition and puts a higher value on critical thinking and evaluation… Helping students develop those critical thinking skills is one of the most important roles a school can play… Technological fluency, once considered optional, will be required of every student, teacher and staff member... The result is engaged, excited students, teachers who make the most of each other's creativity, and a community willing to share its expertise" (Peterson, 2005).

Schools that integrate technology into their everyday curriculum reported that "exciting changes are taking place... Multimedia--once treated as independent from learning in students' core classes--is now being used by teachers and students to gain new insights across a variety of subjects" (Looney, 2005). Integrating technology into all areas of the curriculum allows students to realize a higher quality of education with more meaningful learning experiences. "Technology is playing an important role in the lives of our children… the impact of technology has personalized and differentiated instruction" (Hertzog & Klein, 2005).

Further, “judicious uses of computer technology supported by adequate organizational and managerial techniques can be injected into the educational system, and if implemented, will make significant improvements in teacher effectiveness and student learning” (Charp, 2002). Additionally, when technology is used in the classroom, “teachers are shown [to] spend less time in front of the class and more time working with small groups of individuals” (Charp, 2002).

One research report indicated that teachers believe that the integration of technology into the classroom “has moved their lessons and assignments from feeling "artificial" to becoming more relevant to the real world. Their students are using more higher-order thinking skills than they did previously. One teacher said using the interactive whiteboard has had a bigger impact on student learning than anything else she has experienced in her 15 years in the classroom” (Peterson, 2005). Additionally, according to an article in the August edition of the Technological Horizons in Education (T H E) Journal, “The value of integrating technology into class curriculum is emphasized in Title II-D of the No Child Left Behind Act, which calls for the combining of technology resources and systems with educator training and curriculum development to fulfill the goal of enhancing learning and increasing student achievement” (Bush, 2005).

Throughout the literature, the use of technology as an assessment and planning tool was found to be more prevalent in the classroom. “Today's technology makes assessment more precise and returns test results faster. It can also create and store a vast amount of exciting and interesting remediation activities. Finally, technology can involve students in alternative methods of teaching and learning tailored to the individual learning styles and standards most appropriate for each student” (T H E Journal, 2005). Another positive factor

regarding the use of technology in assessment was that “technology strengthens assessment and evaluation by allowing visualization and review of student products” (Hertzog & Klein, 2005). As a result, there was an “increased emphasis on providing teachers with systems and training on how to use data as part of their instruction” (Rivero, 2005).

Another area in which the use of technology was shown to be increasingly important was in the area of school and family communication. According to a research study, “in addition to producing results in the classroom, the new technology allows teachers to be much more efficient in their communication with parents…” (Peterson, 2005). The use of technology was also reported to be a preferred means of communication among parents and students. "It's easier for parents to send a short e-mail to the teacher or for teachers to send a short e-mail to the parents, than it is to play the inevitable game of telephone tag” (Doucet, 2003).

The use of the internet in the classroom was shown to be more and more widespread. “There are clear signs that the internet is becoming central to the learning experience, with 90% of 9-19 year old weekly users going online for school work and with 60% of pupils regarding the internet as the most useful tool for getting information for homework… Thus, there is considerable scope for increasing the internet related skills and literacy of both children and [teachers]” (Economic & Social Research Council [ESRC], 2005, p. 14). Additionally, the need for "increasing internet skills is vital since it seems that children and young people’s level of online skills has a direct influence on the breadth of online opportunities and risks they experience” (ESRC, 2005, p. 3). As a result, teachers must be trained in the effective use of the internet as a teaching and learning tool.

The literature also supported the need for staff development and teacher training in the area of technology. “In the past 15 years, the need for teacher training in technology across all subject areas has been increasingly discussed... Along with this…a review of educational technology research from 1987-93, indicated that instructional methods and strategies for using technology effectively have been given little, if any, real attention,” resulting in an “increased need for technology training” (Bauer, Reese, & McAllister, 2003).

The goal of staff development and teacher training “is to make teachers more effective at teaching their content to their students, not using technology for the sake of appearing up-to-date… Teacher training in technology should be specific to the subject and grade level taught… [T]eachers should be proficient in the use of essential technology for communicating with colleagues, students, and parents and for learning new material in their own disciplines” (Rivero, 2005).

The legislation of the No Child Left Behind Act (NCLB) of 2001 required that all educators become “highly qualified” by the end of the 2005-2006 school year (U.S. Department of Education [USDE], 2002). Becoming “highly qualified” included the requirement for all teachers to become trained in the use of technology in the classroom. As a direct result of the NCLB legislation, the U.S. Department of education “is funding studies of teaching and learning that incorporate the effective use of technology…” (Rivero, 2005). Consequently, the National Education Technology Plan (NETP) was released in January of 2005. The plan recommended that states, districts, and individual schools act immediately to “Improve the preparation of new teachers in technology use… Improve quality and consistency in teacher education ‘through measurement, accountability, and increased

technology resources;' and ensure [that] teachers know how to use data to personalize instruction" (Rivero, 2005).

Although providing staff development and ongoing technology support could be a lot of work, "once [teachers have] gone through a program, they really begin to see the ways the classroom can change using technology" (Rivero, 2005). It was also found that "a high level of agreement exists among practitioners, researchers, and policymakers regarding the key features of effective professional development programs for K-12 teachers… [T]raining…plays a crucial role in supporting teachers in achieving the optimal outcome of changing their practice by making use of multiple new technology-rich lessons" (Kanaya, Light, & McMillanCulp, 2005). In support of this statement, an article in a recent issue of *Technology & Learning* stated that "educators should…feel competent in using technology to teach…. Most important is not just the acquisition of specific technology skills but how these skills can more generally be used to strengthen and enhance classroom instruction" (Gersh, 2004). Further, because teachers sometimes "feel they are alone in their schools without all the support they need to succeed, [teacher] training is very important" (Charalambos, Michalinos, & Chamberlain, 2004).

"As the technological age continues to render traditional classroom practices obsolete, many educators are still untrained and apprehensive when it comes to technology integration. Therefore, a paradigm shift is needed" (Hinson, Laprairie, & Cundiff, 2005). Along this same line, it was reported that "For any paradigm change, and certainly for reflecting on STL (scientific and technological literacy) ideas, it is essential for teachers to be involved in professional development" (Laius & Rannikmae, 2004). Therefore, the need for

schools to develop and implement staff development and teacher training workshops in the usage of technology tools in the classroom was found to be increasingly important.

Causative Analysis

In KCA, there were a number of causes leading to the lack of technology usage by the teachers and staff. The primary cause of this problem was a lack of training and inconsistent or nonexistent technology support. In addition, technology trainings were not regularly scheduled in past school years and ongoing support was not readily available. As a result, many teachers were unable or unwilling to include technology in their daily teaching practices.

Analysis of survey and interview results revealed that the teachers of KCA felt that they were not equipped to use technology in their daily lives. Most teachers reported little or no personal use of computers in their daily routines. Although a few teachers indicated that they occasionally used computers as word processing tools and for entertainment purposes at home, none of the regular classroom teachers reported the use of computers as a teaching and learning aid in the classroom.

The majority of teachers at KCA also reported feelings of apprehension when faced with the prospect of using the school's new online grade reporting system. Even more trepidation was reported regarding the use of the school's recently acquired interactive SMART board in their daily lessons. While almost all teachers reported a decrease in student achievement and interest in the lecture-format of the school's curriculum, very few teachers expressed an interest in using the available technology tools to engage students in the learning process and to increase student success.

Analysis of student survey forms indicated a strong interest in the use of technology as a teaching and learning tool in the classroom. Most students reported ongoing and consistent use of technology outside the classroom in their everyday lives. As a result, the majority of students expressed the belief that they would benefit from the use of technology in the classroom.

According to the student survey results, there were many perceived obstacles preventing the use of technology in the daily classroom routines at KCA. The top five obstacles students reported were: (1) a shortage of available computers; (2) the inconvenient location of computers; (3) a lack of time in the school day for computer use; (4) limited teacher knowledge and skill in technology use; and (5) teachers' reluctance to include technology in daily assignments. Further, many students agreed that teacher training in the use of technology was one of the most important ways in which the administration could positively impact the learning environment of the school.

Chapter III: Outcomes and Evaluation

Goals and Expectations

The primary goal of the research study was to provide untrained or under-trained teachers at KCA with adequate training in the use of technology. Another goal of the project was to allow teachers to realize the impact that the use of technology could have on their daily teaching, classroom management, and record keeping routine. Implementing a regular training program and creating a support system would allow teachers to become comfortable utilizing the resources that are available to them in their daily classroom and teaching practices. Consequently, teachers would realize an increase in the amount of time they are able to spend in developing and implementing more effective lessons and classroom activities.

Expected Outcomes

The first step of the process was created to ensure that all teachers were able to use the online grading system as required. Next, the project focused on allowing all teachers to be able to use technology to complete daily tasks such as test creation, parent and student communication, and other administrative duties. Finally, all teachers would be encouraged to begin to use technology to enhance their daily lesson plans and classroom activities.

Upon completion of the project, it was anticipated that the previously untrained or under-trained teachers would be able to apply their new technology skills on a regular basis in their classrooms. Additionally, the writer anticipated that teachers with previous technology training and experience would be able to effectively implement technology in their classrooms on a daily basis to enhance their students' learning at the conclusion of the

project. As a result of the project, students would experience more technology in their daily lessons, becoming more interested and involved in their learning experience.

Measurement of Outcomes

To measure the outcomes of the research study, all teachers were interviewed to measure their beliefs and feelings about technology and their technology experience at both the onset and conclusion of the project. In addition, all teachers completed a survey to measure the frequency of their technology use inside and outside the classroom at the beginning, middle, and end of the project (Appendix B). Further, all teachers responded to a questionnaire after each staff development and training session regarding their experiences (Appendix C). Selected students were surveyed before, during, and after implementation regarding their opinions about the use of technology in the classroom and the perceived affect it had on their learning experience (Appendix D). Finally, selected parents were surveyed at the beginning and end of the project regarding their children's classroom experiences, level of achievement, and the increase or decline in any behavioral issues (Appendix E).

Analysis of Results

The teacher interview results were analyzed to determine any changes in their beliefs and feelings about technology. These results were also used to measure the teachers' level of comfort in using technology on a daily basis before, during, and after the project. Additionally, the teacher survey results were analyzed to determine any changes in the frequency of teacher technology usage inside and outside of the classroom from the beginning of the project to its conclusion. Finally, the teacher questionnaire results were

analyzed to determine teacher satisfaction with and quality of the training sessions that were offered.

The results of the student and parent surveys were analyzed to determine any changes in their opinions regarding the use of technology in the classroom and any impact technology may have had on the students' classroom experiences. Additionally, these results indicated the level of parental awareness of any changes in the students' classroom achievement as well as whether any behavioral changes occurred as a result of the use of technology in the classroom.

Chapter IV: Solution Strategy

Statement of the Problem

The problem was that very few of the teachers in KCA were using the technology that is available to them for assistance in their daily teaching, classroom management, and record keeping routine. This limited the time they were able to spend developing and implementing more interesting and effective lesson plans and classroom activities.

Discussion

There were many suggestions offered in the literature regarding possible solutions to the problem, most of which centered on training and professional development. According to a report on the integration of technology into classrooms in the School District of Philadelphia, "providing the appropriate professional development to teachers, principals, and administrators was a key factor" in the program's success (Renzulli, 2005).

It was also suggested that schools and administrators create a set of goals regarding technology usage and classroom integration. "Success hinges on the development of a coherent, long-term professional development plan that focuses on desired changes" (Hinson, Laprairie, & Cundiff, 2005). Additionally, it must be understood that "lasting instructional change is difficult to develop and maintain. However, sustainable changes can occur through development of long-term goals and objectives, involvement of representative stakeholders, an inclusive implementation time line, and comprehensive formative assessment procedures…" (Hinson et al., 2005).

Further, it was important to realize the need for ongoing support and leadership in addition to staff development and training. "Through strong vision and leadership, the number of educators who can integrate technology effectively into their teaching practices

will increase, which will ultimately lead to higher levels of student achievement" (Hinson, Laprairie, & Cundiff, 2005). Consequently, it was imperative that a support system in the school be established and maintained, ensuring that teachers feel comfortable in the daily usage of technology and that they understand where to turn when help is needed.

Selected Solutions/Calendar Plan

The solutions that were selected as part of the implementation phase of the action research project were: (1) to provide regularly scheduled training opportunities for teachers in the use of the online grading system, the interactive SMART board, and other software applications that are found to be helpful to teachers in their everyday routines (including Microsoft Word, Excel, PowerPoint, and KidPix by RiverDeep); and (2) to provide ongoing support to include after-school, on-site availability as well as evening and weekend assistance via e-mail and telephone. The following calendar plan was proposed for the implementation of the selected solutions (Appendix F).

Weeks One to Three

The teachers were required to attend two four-hour training sessions in the use and implementation of the TrackMyGrades.com online grading system. These training sessions were held on days in which teacher in-service and staff development meetings had previously been scheduled as part of the school calendar. The first training session was used to instruct the teachers the fundamental aspects of the program, including information on creating grade books using both weighted scales and point systems, setting up student rosters, and inputting student and family information. Also included on this day was instruction on the different categories of grades used at KCA (i.e., tests, quizzes, homework, classwork/participation). Finally, the day concluded with a practice session using fictional data. The second training

session began with a review of the information learned during the first session and a thirty-minute question/answer period. During the second hour of the session, the trainer began walking the teachers through the process of inputting actual roster data and student/family information for each class. The final half of the session was used to input student grades for the first marking period. During this time, the trainer was available to answer questions, help teachers find solutions, and provide support and encouragement as needed.

During the third week of implementation, the trainer was available to teachers after school in the computer lab for any questions, support, or encouragement that was needed. Teachers were reminded at the beginning of the week that extra help would be provided and they were encouraged to ask questions and seek help. Additional support was given during the evening and weekend hours via e-mail and telephone for those teachers who needed any assistance during this time.

Weeks Four-Eight

The teachers were required to attend five two-hour training sessions after school as part of the staff development program mandated by the school's administration. The first two training sessions concerned the use of the interactive SMART board as a teaching and learning tool in the classroom. Training included demonstrations of a variety of special features of the board, specific use of the required Notebook software application, and the involvement of students in the learning process through the use of the SMART board. Throughout these sessions, teachers were interacting with the board, learning its use in a "hands-on" manner. This allowed them to understand the interest that could be garnered during what once was a "boring" lecture or drill. This also allowed them to experience the different ways in which the board can be used as a teaching tool. To conclude these sessions,

teachers were taken online (via the SMART board) to search for teacher-created lesson plans using the SMART board at all grade levels and with all age ranges via the teacher section of the SMART technologies website.

The third and fourth sessions focused on the use of Microsoft Word and Excel as both teaching and administrative tools and Microsoft PowerPoint as an effective teaching and learning tool. Teachers were trained during the third session regarding the use of Microsoft Word and Excel, including different duties that can be performed through the use of the programs (i.e., lesson plans, attendance, student/parent database, bulk mailings). The fourth session included training in Microsoft PowerPoint so that teachers were aware of the valuable teaching potential the software and its use have to offer. Both the third and fourth session concluded with time for teachers to work independently, experimenting and "playing" with the different applications while being allowed to ask questions and receive support and feedback from the trainer.

The fifth session focused on the use of KidPix, a publishing and creativity software application primarily for use with children aged five to twelve. The kindergarten through eighth grade teachers were the focus of this training session, although the other teachers were also encouraged to attend. During the first hour of this session, the teachers were trained in the use of the software and given project examples as well as lesson plan ideas for use in the classroom. The session concluded with each teacher creating a short presentation using the software and available hardware while the trainer was available to answer questions and offer feedback and support.

Weeks Nine to Twelve

The final four weeks of the project consisted of training refresher courses and support sessions offered after school, two to three days per week. During this time, the trainer was available to help teachers with the use of any software or hardware that has been introduced. Additionally, the trainer was available to answer any questions, provide support, and assist teachers in finding additional classroom and student projects. Further, the trainer provided the teachers with additional templates for use in their daily administrative duties and offered ideas and suggestions on ways to integrate technology throughout their daily schedules, inside and outside of the classroom. Teachers were encouraged to explore other areas of technology use that interested them during this time, including the use of the internet as a teaching and learning tool. Finally, the trainer was available throughout the entire implementation phase of the project as needed in the classroom as teachers began to integrate technology into their daily routines. The trainer was also available via e-mail and telephone to offer evening and weekend support as needed.

Chapter V: Results

Results

The problem was that very few of the teachers in Kearny Christian Academy (KCA) were using the technology that was available to them for assistance in their daily teaching, classroom management, and record keeping routine. The goal of this study was to help teachers understand the ease and importance of utilizing the technology that was available to them and train them in using that technology on a regular basis, thereby enabling them to establish effective routines that would enhance their daily teaching practices.

The first goal of the study was to ensure that all teachers would be able to use the online grading system as required. This goal was successfully achieved. At the conclusion of the project, administrators reported that all teachers were able to use the online grading system as required to post student grades and attendance, view and print progress reports, and provide an opportunity for parents to view their children's grades online on a weekly basis.

The project's second goal was to enable all teachers to use technology to create tests, communicate with parents and students, and complete a variety of administrative duties. For the most part, this goal was met, although many teachers still reported the use of phone calls and handwritten notes for parent communication in lieu of e-mail. Still, the teachers were regularly observed using the available technological tools for all other daily and administrative duties as trained in the project workshops.

The third goal of the study was to allow teachers to use technology to enhance their daily lesson plans and classroom activities. This goal was also achieved as teachers were observed using technology more often. Many teachers and students reported the use of technology in the classroom. As a result, many students became more involved in their

learning than previously reported as their daily classroom routines were enhanced through the use of technology.

Discussion

At the conclusion of the study, teacher surveys and interviews indicated an increase in the use of technology in their professional and personal lives. Many teachers indicated at least two hours each day utilizing both personal and laptop computers at home and in the classroom as well as the SMART interactive white board and its accompanying LCD projector. At the same time, teacher observations and interviews revealed an increase in the use of technology in the daily classroom routine to include interactive SMART board activities, web-quests, and online research expeditions. Additionally, teacher surveys reported an increase in the use of technology to expedite daily and ongoing administrative duties as well as an increase in the use of e-mail as a form of ongoing and daily communication between school and home. Further, teacher questionnaires revealed a deep sense of satisfaction with all training sessions as well as an appreciation of the support that was available throughout the project.

Student surveys also indicated an increased presence of technology in the classroom at the conclusion of the project. Students expressed satisfaction and enjoyment in the many new lessons experienced in class, from online research and study sessions to web-quests and interactive lessons using the SMART board and LCD projector. In addition, student surveys reported that teachers seemed more technologically confident than before, while teacher surveys revealed an increase in student participation and increased levels of student achievement throughout the implementation of the study. Parent surveys also indicated an increase in their understanding of technology's impact on the classroom and student learning.

Further, the parent surveys indicated an increase in student achievement and a decrease in behavioral problems as well as an increase in communication efforts between school and home through the use of e-mail.

Overall, the research study proved to be a success. Teachers, parents, students, and administrators all reported satisfaction in the realized outcomes of the project. Teachers reported feeling more capable of utilizing the technology available to them while parents and students reported many improvements in classroom routines and academic achievements. Finally, the administration indicated its pleasure in the success of the project and made plans to continue staff development and training sessions, encourage the continued use of technology by providing support both in and out of the classroom, and to provide the appropriate and necessary upgrades and repairs required to maintain the project's successful results.

Recommendations

The following recommendations were suggested for other researchers interested in conducting a similar study.

1. Through the implementation of the research study, the writer found that conducting the training sessions and workshops with large groups of teachers was somewhat ineffective. Consequently, it was recommended that training sessions be provided to small groups of teachers rather than an entire staff.
2. Additionally, the writer suggested that a scheduled time be set for teachers to contact the trainer during after-school hours for assistance. Often, teachers would call for assistance at times that were inconvenient and a predetermined

schedule for answering these calls would eliminate any problems that could arise as a result.

3. Finally, the writer advised that ample time should be arranged in the implementation calendar plan for classroom observations as well as for helping teachers integrate technology into their daily classroom lessons and routines. Often, schedules were limited and observations became very rushed. Also, many teachers needed more assistance using some of the technological tools in their classrooms than the writer had anticipated. Consequently, more time would be needed to more effectively address this issue.

The writer has concluded that the following recommendations would benefit Kearny Christian Academy as the solutions are implemented during future school years.

1. Staff development and training sessions would need to continue as the solutions are further implemented throughout the school. The ongoing trainings would provide the necessary support and encouragement to teachers who are insecure in their abilities to use technology in the classroom. The workshops would provide activities, resources, and motivation for the use of technology throughout the school.
2. Support would also need to continue both inside and outside of the classroom and school. A set schedule of after school technical support as well as designated support personnel would enable teachers to further realize the ability to experiment and utilize technological tools that were previously unused. Further, the additional and ongoing support would continue to

encourage teachers to develop their technology skills, thereby developing their confidence in using such tools.

3. Continued and ongoing administrative support would also be recommended. This support would include any necessary repairs and upgrades to existing equipment and software programs to ensure the efficacy of available technology. Additionally, the purchase of additional educational and administrative software programs would allow teachers to continue their development in the use of technology as well as provide more opportunities for students to experience technology in their daily classroom activities.

Plans for Dissemination

The findings of the study were introduced at one of the monthly meetings of the Kearny Christian Academy Board of Administrators. Included was a PowerPoint presentation, a question and answer session, a discussion of the results and their impact on the learning environment at KCA, and suggestions for expanding the research study into a fully developed technology curriculum to be integrated throughout the school.

Were the research study to be fully implemented and realized, the results could be submitted for publication in professional magazines or journals to include Campus Technology, THE Journal, Learning Point Magazine, Educational Technology Journal, MultiMedia and Internet@Schools Magazine, Technology & Learning Magazine, and the Journal of Research on Technology in Education. According to its publication submission guidelines, "*JRTE* publishes articles that report on original research, system or project descriptions and evaluations, syntheses of the literature, assessments of the state of the art, and theoretical or conceptual positions that relate to educational computing" (International

Society for Technology in Education [iste], 2004, p. 2). The writer concluded that this journal would, therefore, be an appropriate outlet for reporting the results of the research study upon the completion of its full implementation.

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Appendix A

Letters of Informed Consent

Teacher Interview/Survey Consent Form

I give my permission to be interviewed and/or surveyed and for my survey to be used as a part of a research project. I understand that my name will not be used in any report or discussion about the project.

_____
Name of Participant

_____ _____
Participant Signature Date

Student Interview/Survey Consent Form

I give my permission to be interviewed and/or surveyed and for my survey to be used as a part of a research project. I understand that neither my name nor my child's name will be used in any report or discussion about the project.

_____
Name of Student

_____ _____
Parent Signature Date

Parent Interview/Survey Consent Form

I give my permission to be interviewed and/or surveyed and for my survey to be used as a part of a research project. I understand that my name will not be used in any report or discussion about the project.

_____
Name of Participant

_____ _____
Participant Signature Date

Appendix B

Teacher Technology Usage Survey

Personal Computer Usage

1. About how many hours per week do you use a personal computer for your job?
   ☐ Zero ☐ One to five ☐ Six to Ten ☐ 11 to 20 ☐ 21 to 30 ☐ 30 or more

2. About how long have you been using a personal computer?
   ☐ Less than one year ☐ 1 - 2 Years ☐ 2 - 5 Years ☐ 5 - 6 Years ☐ More than 10 Years

3. Which statement below best describes your level of understanding about how to use a personal computer/PC?
   ☐ I don't know how to turn on a personal computer.
   ☐ I can turn on a PC, but I have trouble with almost everything else.
   ☐ I know the basics of how to use my PC, but not much more.
   ☐ I understand how to use most of my software, and have little trouble learning new software.
   ☐ I completely understand my PC software and hardware.

4. Please indicate your level of agreement with each statement below.

	Disagree Strongly	Disagree Somewhat	Agree Somewhat	Agree Strongly
I wish computers had never been invented	☐1	☐2	☐3	☐4
I find computers extremely easy to use	☐1	☐2	☐3	☐4
I really enjoy learning new personal computer software	☐1	☐2	☐3	☐4
I give more computer advice to other people than I receive	☐1	☐2	☐3	☐4

5. Please rate how difficult you find each of the following tasks to be.

	Very Difficult	Somewhat Difficult	Easy
Toggling (switching) between computer programs without exiting	☐2	☐3	☐4
Copying and moving files between directories	☐2	☐3	☐4
Printing documents	☐2	☐3	☐4
Formatting documents	☐2	☐3	☐4
Copying information from one document to another	☐2	☐3	☐4
Saving documents	☐2	☐3	☐4
Loading new software onto a personal computer	☐2	☐3	☐4
Finding solutions to problems that occur with a personal computer	☐2	☐3	☐4

Hardware Usage and Needs

6. Do you have access to or use a PC at home? ☐ Yes ☐ No (Skip to question x)

7. What type of PC to you usually use at home? IBM/IBM Compatible Apple

8. How much storage capacity (hard drive size) does this computer have?
   ☐ Less than 200 Megabytes ☐ 200 - 500 Megabytes ☐ 500 - 800 Megabytes
   ☐ More than 800 Megabytes ☐ Don't Know

9. How fast is this personal computer?

☐ 4 to 8 Mhz ☐ 9 - 66 Mhz ☐ 66 - 100 Mhz
☐ 101 to 200 Mhz ☐ More than 200 Mhz ☐ Don't Know

10. How much memory (Megabytes of RAM/Random Access Memory) does this personal computer have?

☐ 8 MB or less ☐ 9 to 16 MB ☐ 17 to 32 MB
☐ 33 to 64 MB ☐ More than 64 MB ☐ Don't Know

11. What size monitor/screen does this computer have?

☐ 14 inch or less ☐ 15 inch ☐ 17 inch ☐ 21 inch or more ☐ Don't Know

12. Does this computer have a CD ROM? ☐ Yes ☐ No

13. Does this computer have a modem? ☐ Yes ☐ No (Skip to question 14)

13a. Is it fast enough for your needs? ☐ Yes ☐ No

14. Please indicate your level of agreement with each statement below.

	Disagree Strongly	Disagree Somewhat	Agree Somewhat	Agree Strongly
I have no difficulty reading items on my monitor/screen	☐1	☐2	☐3	☐4
I often find myself waiting for my machine after clicking the mouse	☐1	☐2	☐3	☐4
I never get "out of memory" messages	☐1	☐2	☐3	☐4
I never run out of room for storage on my hard drive	☐1	☐2	☐3	☐4

Software Usage and Needs

15. Which of the following software do you have on your computer?

Word Processing

☐ MS Word for Windows ☐ WordPerfect for Windows ☐ WordStar
☐ WordPerfect DOS version ☐ Lotus Ami Pro
☐ Other _____

Spreadsheet

☐ Excel for Windows ☐ Lotus for Windows ☐ QuattroPro
☐ Lotus DOS version ☐ Other _____

Presentation

☐ MS PowerPoint ☐ Other _____

Operating System (IBM and Compatibles Only)

☐ Windows 95 ☐ Windows 3.1 or earlier versions
☐ Windows NT ☐ Windows for Workgroups
☐ Other _____

Other (List anything you have that does not fit into the categories above)

☐ _____ ☐ _____
☐ _____ ☐ _____
☐ _____ ☐ _____

16. Please indicate your level of agreement with each statement below.

	Disagree Strongly	Disagree Somewhat	Agree Somewhat	Agree Strongly
I have as much software as I need to do my tasks efficiently	☐1	☐2	☐3	☐4
I have the right software to do my tasks efficiently	☐1	☐2	☐3	☐4
I sometimes have difficulty exchanging files with others who have different software from mine	☐1	☐2	☐3	☐4
When I need new software, it is easy to obtain it	☐1	☐2	☐3	☐4
My software sometimes does not do what I want it to do	☐1	☐2	☐3	☐4
The software I have is easy to use	☐1	☐2	☐3	☐4

Training and Support

17. How do you usually learn new software programs?

- ☐ I don't really learn them -- I try to avoid using them.
- ☐ I take a course offered by the company.
- ☐ I take a course offered outside the company.
- ☐ I ask questions of coworkers until I know enough about the software to use it on my own.
- ☐ I learn the software on my own by using it and/or reading about it..

18. Have you asked anyone at work for software support? ☐ Yes ☐ No

If yes, how would you rate the help you received? ☐ Poor ☐ Fair ☐ Good ☐ Excellent

If no, why have you not asked anyone at work for help with your software? (CHECK ALL THAT APPLY)

- ☐ I never have any problems with my software.
- ☐ I didn't know we had a corporate help desk.
- ☐ I don't know the corporate help desk's telephone number.
- ☐ I don't think the corporate help desk would be able to help me.
- ☐ I prefer to call the software vendor.
- ☐ I have heard negative things about the corporate help desk.

19. In the space below, please write any comments (positive or negative) or suggestions you have about your personal and professional computer usage.

_____

_____

_____

_____

Thank you for taking the time to complete this survey.

Appendix C

Training Response Questionnaire

Staff Training and Professional Development

Name of Course "Technology in Teaching" **Name of Trainer** Terresa D. Fontana

Please comment as fully as possible on all relevant items. Where scoring ranges are given, circle the score that most closely represents your views.

General

1. To what extent have the objectives of the course been achieved?

Fully					Not at all
6	5	4	3	2	1

If you have scored 3, 2 or 1, please comment why you have given this rating.

2. To what extent have your personal objectives for attending the course been achieved?

Fully					Not at all
6	5	4	3	2	1

If you have scored 3, 2 or 1, please comment why you have given this rating.

3. To what extent has your understanding of the subject improved or increased as a result of the course?

A Lot					Little
6	5	4	3	2	1

If you have scored 3, 2 or 1, please comment why you have given this rating.

4. To what extent have your skills in the subject of the course improved/increased as a result of the course?

Much					Little
6	5	4	3	2	1

If you have scored 3, 2 or 1, please comment why you have given this rating.

5. To what extent has the course helped to enhance or benefit your responsibilities as a teacher?

Much					Little
6	5	4	3	2	1

If you have scored 3, 2 or 1, please comment why you have given this rating.

6. To what extent was material necessary to the course provided to you prior to the course?

Fully					Not at all
6	5	4	3	2	1

7. What is your overall rating of this course?

Excellent					Poor
6	5	4	3	2	1

Make any comments on your ratings that you feel will be of help to the designer and administrators of this course.

Trainer Evaluation

Please rate the staff development trainer by circling the relevant score for each characteristic.

	Very effective	***Good***	***Not very effective***	***Not at all effective***
(a) Knowledge of subject	4	3	2	1
(b) Organization of sessions	4	3	2	1
(c) Obvious preparation	4	3	2	1
(d) Style and delivery	4	3	2	1
(e) Responsiveness to group	4	3	2	1
(f) Produces a good learning climate	4	3	2	1

Thank you for taking the time to complete this survey.

Appendix D

Student Opinion Survey

Technology in Schools Survey

In a typical week, which of these technology products do you use? (Circle all that apply.)

a. Desktop computer
b. Laptop computer
c. Cell Phone
d. Hand-held device (PDA)
e. Digital camera
f. Video camera
g. Scanner
h. DVD or CD burner
i. MP3 player or iPod-type device
j. Video game player
k. None of the above

Which of the following devices do you think are essential to have in a 21st century classroom? (Circle all that apply.)

a. Desktop computer
b. Laptop computer
c. Cell phone
d. Hand-held device (PDA)
e. Smart Board
f. Big-Screen television
g. Digital camera
h. Video camera
i. Scanner
j. DVD or CD burner
k. MP3 player
l. Video game player

In a typical week, which of these Internet tools do you use? (Circle any that apply.)

a. Email
b. Specific Internet websites you already have bookmarked
c. Personal website (e.g. My Yahoo, myspace.com)
d. Search engine (e.g. Google) or research sites (BigChalk)
e. News website
f. Instant Messenger (IM)
g. Discussion boards
h. Chat rooms
i. Web logs (Blogs)
j. Online game sites
k. Podcasts
l. None of the above

What are the main obstacles you face in using technology at your school? (Circle all that apply.)

a. Not enough computers
b. Computers are not in a convenient location
c. Computers don't work regularly
d. Outdated software
e. Slow Internet access
f. Not enough time in the school day
g. Limited teacher knowledge and skill
h. School filters or firewalls
i. Assignments don't encourage technology use
j. Rules against using my cell phone, email, or IM account
k. Teachers control when we use the computers
l. I don't know how to use the technology
m. It's hard for students who don't have computers or Internet at home
n. No obstacles

Do you plan on pursuing a job or career in computer science, programming, web design, or technology support?

a. Yes
b. No
c. Not sure

What do you like best about using technology to complete assignments? (Circle any that apply.)

a. I can get the most accurate and up-to-date information online.
b. I can get assignments done more efficiently.
c. I can work together with others.
d. It's more fun.
e. I have more ways to share my work using tools like PowerPoint and iMovie. f. I understand concepts more easily when using technology.
g. I can do multiple things at once.
h. I make fewer errors

If you were the principal at your school, what is the ONE thing you would change about technology at your school?

a. Purchase more or better computers, software, and equipment (e.g., printers, scanners, or digital cameras)
b. Have faster Internet and wireless access.
c. Allow students to take online classes.
d. Use online textbooks.
e. Allow students to use cell phones, IM, and email at school
f. Give students an MP3 player (iPod) or PDA for school use.
g. Hire people to make sure computers work all the time.
h. Send teachers to training classes about how to use technology.
i. Provide a laptop to each student.
j. Less restrictive firewalls and filters.

Which school subject would be more interesting to you if you could use more technology in that subject? (Choose the one where technology would make the most difference.)

a. Math
b. English or Writing
c. Social Studies or History
d. Science
e. Foreign Language or ESL
f. Art
g. Music
h. P.E. or Gym

Which of the following would make learning science more interesting to you? (Select any that apply.)

a. Designing my own investigations
b. Taking field trips to science museums, labs, zoos, etc.
c. Meeting with scientists
d. Learning about science careers
e. Using multimedia and interactive simulations
f. Conducting research on the Internet
g. Super knowledgable science teachers
h. Using equipment like microscopes
i. Watching movies about how things work
j. Solving real life problems
k. Other
l. None of the above

In your opinion, what does your school need more of to help you learn science? (Choose your top choice.)

a. Updated books and lab equipment
b. More use of technology, probes, and data collection devices
c. More time spent on science
d. Encouragement from teachers
e. Field trips
f. Career outreach, mentors, and internships
g. After-school clubs or activities
h. Science competitions or fairs
i. Classes with special topics like CSI (Crime Scene Investigation)
j. None of the above

Good technology skills are necessary for which of the following? (Select all that apply.)

a. Doing well in school
b. Finding a job
c. Success in college
d. Being well informed
e. Making money
f. Keeping in touch with family and friends
g. Being happy
h. Being a good citizen
i. None of the above

If you were designing a new school for students just like you, which of these would be most important? (Select your top choice.)

a. Fast, wireless Internet access throughout the school
b. New up-to-date software
c. A new computer for every teacher
d. Digital cameras and video equipment that could be borrowed by any student
e. Computer labs that stay open after school and on weekends
f. Access to school computers and the school network from home
g. Laptops for every student that can be taken home
h. A fully equipped film studio
i. Other (student input)

Science, technology and innovation are clearly important for your future. What should your school do to make sure you have the knowledge and skills to be successful?

_____

_____

_____

_____

Thank you for taking the time to complete this survey.

Student Survey adapted from the NetDay.org Speak Up Student 2005 Survey

Retrieved October 29, 2005 from
http://www.netday.org/downloads/2005_Survey_6_12.pdf

Appendix E

Parent Opinion Survey

Technology in Schools Survey

Assuming all activities are completed in a secure and supervised environment at an age appropriate level, please rate the following questions on a scale of 1 through 4.

1 = no interest **2** = low interest **3** = some interest **4** = high interest

1. How important to you are the following uses of technology as a supporting tool in your child(ren)'s education at Kearny Christian Academy?

Develop keyboarding skills.	1	2	3	4
Use the computer to make pictures or graphs to better explain ideas.	1	2	3	4
Use word processing programs to draft and edit pieces of writing.	1	2	3	4
Search the Internet to find information for assignments.	1	2	3	4
Use educational software programs as a tool to support learning in core areas, e.g. reading, writing, math, science, etc.	1	2	3	4
Create multi-media presentations.	1	2	3	4
Create Web pages as part of class work.	1	2	3	4
Work in teams with other students when using technology.	1	2	3	4
Use email to communicate with others in learning activities.	1	2	3	4

2. How interested are you in:

Discussing questions with teacher(s) via email.	1	2	3	4
Receiving news/communication from teachers via email.	1	2	3	4
Viewing your child's work on the school's Website.	1	2	3	4
Obtaining up-to-date public information, e.g. calendar, school closings, events, news, etc. on the school's website.	1	2	3	4

3. Does your family have regular access to the following?

A computer	yes	no
Internet service	yes	no
Email Access	yes	no

4. **If yes, do or would you feel comfortable allowing your child(ren) brief access to complete homework assignments using technology?** yes no

5. **Please describe what concerns and/or excites you about the prospect of using technology in the classrooms of Kearny Christian Academy.**

_____

_____

6. **How can technology improve student motivation, attitude, and interest in learning?**

_____

_____

7. **How can technology help to prepare students for the workforce?**

_____

_____

8. **Has the use or lack of technology in the classroom affected your child's success in school? If yes, please explain.**

_____

_____

9. **Has the use or lack of technology in the classroom affected your child's behavior in the classroom? If yes, please explain.**

_____

_____

_____

Thank you for taking the time to complete this survey.

Parent Survey adapted from the Breakwater School Parent Technology Survey

Retrieved October 29, 2005 from
http://www.breakwaterschool.org/TechnologyPlan.pdf

Appendix F

Calendar Plan

	Week 1	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**
Training Offered	Online Grading System	Online Grading System	Online Grading System	SMART Board	SMART Board	MS Word MS Excel
	Week 7	**Week 8**	**Week 9**	**Week 10**	**Week 11**	**Week 12**
Training & Support Offered	MS PowerPoint	KidPix by RiverDeep	After School Refresher Courses & Support Sessions	After School Refresher Courses & Support Sessions	After School Refresher Courses & Support Sessions	After School Refresher Courses & Support Sessions