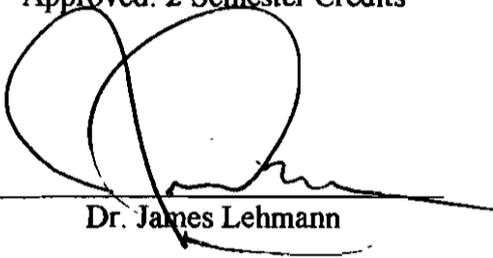Enhancing Education

with

Technology

by

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A Grant Proposal Project Report
Submitted in Partial Fulfillment of the
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Master of Science Degree
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ABSTRACT

Phillips Middle School is a building ground for students as they prepare for future success. In order for students to obtain technology skills, they must have access and exposure to the various forms of technology. Phillips Middle School lacks computers in the classroom for individual student use as well as presentation equipment in each classroom including interactive white boards and projectors that can be used to enhance student learning.

Purchasing one additional computer, printer, one interactive white board, and one projector for each classroom at the Phillips Middle School would greatly benefit the students, the school, and the community. It would give students additional skills that they will need in order to compete in the twenty-first century and help meet the needs of diverse learners.

The major activities of this grant will include training teachers how to incorporate various technology tools such as the interactive white board into their instruction; teaching with the

newly learned technology; showing the students how to use various technology tools to solve problems and think critically; and, presenting to different members of the community using technology.

Grant activities will be evaluated through surveys and questionnaires taken by both students and teachers. Teachers will document how well students responded during lessons where the interactive white board was used as well how often students use the computer in the classroom for learning.

Grant findings will be disseminated with the Phillips School Board, the special education department in the Phillips School District, a classroom web site created and maintained by seventh grade students, and to the Cooperative Educational Service Agency (CESA) #12 in the fall of 2009.

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Chapter I: Introduction

The purpose of this grant proposal is to provide students at Phillips Middle School the

same learning opportunities students at other schools have through the use of interactive white

boards and personal computers in the classrooms. Phillips Middle School is located in rural,

northern Wisconsin. The school district is made up of three schools, elementary, middle, and

high school. The district provides learning opportunities for 920 students with 95.7 percent of the

students being Caucasian, 2.9 percent are American Indian, and 1.4 percent African-American.

Thirty-seven percent of the students qualify for free and reduced lunch.

Phillips Middle School offers unique learning experiences for students in grades sixth

through eighth. Students learn the skills they need to continue their education and strive to reach

their goals as they move forward into the future. Phillips Middle School is a building ground for

students as they prepare for high school, post high school education, and a lifelong career. The

Phillips Middle School prepares students for future success by focusing on the individual student

and incorporating the use of technology in learning to support critical thinking and problem

solving skills.

As more and more jobs require technology, it is important that students understand how

to use technology in a variety of ways. Hopson, Simms and Knezek (2001) stated, "The advent

of the Information Age has made the development of problem solving, critical thinking, and

higher-order thinking skills crucial to future success" (p. 109). In today's world, more and more

emphasis is placed on technology. According to the U.S. Department of Labor (2007), some of

the fastest growing occupations are technology related including computer software engineers,

network systems analysts, and computer systems administrators. Almost every occupation

requires the use of some form of technology that must be learned and be used correctly by the employee.

Unfortunately, due to less state funding towards smaller, rural schools, and failed referendums, cuts in the technology area had to be enforced at the Phillips Middle School. This has resulted in no computers in the classroom for student use and no interactive white boards, which other schools have, and which gives their students one more technology opportunity that students in Phillips Middle School do not have the opportunity to use to help them learn.

Statement of the Problem

The problem is if Phillips Middle School is unable to provide more technology opportunities for their students, they will fall behind other students who do have access to those opportunities. The interactive white boards in the classroom can also help motivate students, and meet the needs of the diverse learners, especially those with special needs. Without the interactive white board, students who are struggling in their classes may continue to do so and with one less strategy to help students to learn will be unavailable. Eventually these students may give up altogether, and the effects of that will be felt by everyone.

By providing the Phillips Middle School with additional resources to purchase additional technology equipment for each of the four seventh grade classrooms, students will become exposed to the numerous ways in which they can use technology to further engage their learning and help prepare them for their future. Through the use of interactive white boards, projectors, personal computers, and printer, students will learn how to use technology to think critically and problem solve. Students will also be more motivated to learn, and that in turn, will affect the quality of work they turn in as well as their attitudes toward learning in general.

Purpose of the Project/Grant Proposal

An increase in the technology equipment for each seventh grade classroom at Phillips Middle School would greatly benefit the students, the school, and the community. An increase in technology would give students additional skills that they will need in order to compete in the twenty-first century. Students will learn how to use the technology to help them solve problems, research information, and think critically. Technology would help bring the school and community together through the open house opportunity. The open house is an opportunity for the community to come into the school and view projects created by the students that involved the use of technology.

Students will be the greatest benefactors of improved technology in the classrooms. An additional computer for student use can allow for students to research information on the Internet right in the classroom under the supervision of the classroom teacher. By having access to the Internet in the classroom, students can travel to faraway places without having to leave the classroom. They can examine the Great Pyramid in great detail. They can take a tour through a castle from medieval times. Students won't just read about what these places are like, but they get to actually see them with their own eyes. The additional computer will also allow for students to complete typing assignments right in the classroom, and it will give them the opportunity to utilize various computer programs such as Power Point, Microsoft Publisher, Inspiration, and other programs they might not have access to at home. Because there will only be one additional computer in the classroom, students will also develop group skills as they utilize the computer at the same time as other classmates.

The interactive white boards will allow for students to become more engaged in lessons as they are able to interact with the board itself. Students who lack the necessary fine motor skills

In the twenty-first century, students, teachers, and the community come across technology every day in some shape and form. It is crucial that students are exposed to the various forms of technology and understand how to use it. Students need to learn how to use technology to help make them more competitive in tomorrow's world.

Definition of Terms

Attention Deficit/Hyperactivity Disorder (ADD or ADHD). A syndrome characterized by impulsivity, a short attention span, and often hyperactivity which interferes with academic and social performance.

Autism. Autism is a spectrum of disorders characterized by deficits in social interaction and communication, and unusual and repetitive behavior.

Interactive white board. An interactive white board is large, touch-sensitive board that is connected to a projector and computer. The computer is controlled by touching the board with a finger or a special pen.

Projectors. Projectors are devices used to project images from the computer screen on an interactive white board.

Methodology

The remainder of the paper will discuss what research has already been conducted with regards to interactive white boards and personal computers for student use in the classroom. The results of these studies will also be discussed and their relevance to the Phillips Middle School. The goals of the grant proposal and their objectives will be stated and discussed how they will be met. The action plan and timeline will provide a detailed plan of what is expected to occur including how and when resources will be used and when certain activities must be completed. Results of the grant proposal will then be conferred to various parties involved. A budget will then be discussed and following that will be a list of appendixes including the cover letter, the grant foundation proposal request, timeline of project activities, budget, and project evaluation survey.

Chapter II: Literature Review

In this chapter, student achievement with regards to technology will be discussed. The chapter will focus on studies that have been conducted regarding the benefits of using interactive white boards and computers in the classroom on student motivation; how technology helps supports different learning styles; how interactive white boards help students with special needs; and, how the exposure to newer forms of technology help prepare students for the future by enhancing critical thinking and problem solving skills.

Motivation

The use of technology, such as interactive white boards, in the classroom can help add variety to the class and keep students motivated. Becta (2003) stated a key benefit of interactive white boards was increased student motivation. D'Angelo and Wooley (2007) found that the learning experience was improved through the use of various forms of technology such as PowerPoint, video segments, and projectors. This helped add variety to the class and helped kept the attention of the students during the lesson. Levy (2002) stated when teachers were able to increase the variety and types of resources used in their lessons, students seemed more interested and motivated to learn. Teachers were able to spice up their lessons with sound, video, and images. The lessons were not routine with the same format and doing the same things over and over, which can be boring. The added special effects helped keep students interested and engaged.

Smart Technologies (2006) reported interactive white boards appealed to both students who were driven to learn and enjoyed learning and students who were driven by enticements or rewards. Intrinsically motivated students were eager to demonstrate their knowledge on the

interactive white board in front of their peers, while extrinsically motivated students were enticed by the enjoyment they experience from using the interactive white board.

Interactive white boards make learning more enjoyable and interesting for students which can help increase student motivation. According to Glover, Miller, Averis, and Door (2005) teachers appear "cool" as they presented material using technology that competed with other media in the lives of students. For instance, teachers added pictures, used color to enhance certain terms, and incorporated the use of sound to keep the attention of the students. Teachers also prepared many creative ways to entice the students' attention and imagination such as adding sound, images, and video clips, which helped motivate students to want to answer questions in order for a chance to interact with the white board (Smart 2006). According to Smith, Hardman, and Higgins (2006), students were more likely to answer teachers' questions because of the strong visual and conceptual appeal of the information that was shown. Because students were constantly bombarded with images and information everywhere they go, seeing the information on the interactive white board was familiar to them.

The use of interactive white boards can also give teachers and the subject area more credibility in the eyes of the students which can make them more motivated to learn. Levy (2002) stated the use of interactive white boards during the lesson helped provide support and credibility to the teacher and the subject. Levy (2002) also stated the interactive white boards allowed for teachers to provide vivid images and explanations for students. Students were able to grasp ideas and concepts more easily because of the many resources, including the Internet, photographs, pictures, maps, calculators, work samples, and videos, available to the teacher to offer better explanations. If students find concepts easier to grasp, they will become more motivated to learn more.

Not only does having an interactive white board in the classroom, increase student motivation to learn, but so does having an additional computer for student use. One additional computer in the classroom for student use allows for students to integrate technology in the classroom, complete work, and research information using the Internet. According to Hopson et al. (2001), students will be more motivated to take control of their learning, stay on task, and find solutions to problems when technology is provided. According to a report by Apple Computer, Inc. (2002), students who had access to a computer in the classroom explored topics on their own and worked longer on school projects. Although there are some drawbacks to having a computer in the classroom for student use including too many students on it at once, one or two students monopolizing it, and technical issues, the benefits of having one outweigh the drawbacks.

It was also reported in the same study that students with regular access to computers felt more confident in their computer skills. Many times that confidence led to better performance in the classroom. If students feel confident in the classroom, they are more motivated to learn. According to Apple Computer, Inc. (2002) this can then decrease absenteeism, lower dropout rates, and motivate students to further their education after high school.

The availability of both an interactive white board and an additional computer in the classroom helped motivate students to learn, but also maximized the use of one computer through the use of the interactive white board (Bell, 2002). Students worked together by contributing at the board, while other students were at the computer, and the rest of the class was discussing the activity. All students were engaged and motivated to participate in the learning process. Students were discussing, collaborating, and working together throughout the lesson.

Different Learning Styles

Every student is unique in how he/she learns. Teachers strive to plan lessons that will reach all students with diverse learning needs. Visual learners learn by seeing. They may think in pictures and learn best from visual displays including diagrams, videos, handouts, and note taking. Students today already come to school with the knowledge and expertise of how to use different kinds of technology to fit their learning style. Donlevy (2005) stated students come armed with cell phones, laptops, iPods, personal digital assistants, computer games, and more. Because these students are already familiar with technology and are already capable of using it in order to learn, they adjust to learning with it in school. Painter et al. (2005) argued that teachers should use technology to help educate students and support their learning styles.

Auditory learners learn by listening through lectures, discussions, and talking things through. Tactile learners, also known as kinesthetic learners, learn by moving, doing, and touching. They learn best through hands-on activities, and may find it hard to sit for longs periods of time. The use of interactive white boards in the classroom can help teachers adapt their teaching styles to these learners.

The use of interactive white boards can help support all of the learning styles. Visual learning can be enhanced through the use of pictures, text, animations, and videos displayed on the interactive white board. DeCraene (2003) stated how in chemistry or biology classes, students can observe and manipulate three-dimensional objects, such as the molecular structure of DNA. Visual learners were also able to see their own writing and creations on the interactive white board, such as editing their own essays in English class or writing a story together as a class. Students participated more because they were given the chance to physically interact with the board in search of the answers. A study completed by Cuthell (2003) found when students

could move through each stage of solving a math problem on an interactive white board, the acquisition of the concept was then enhanced. Painter et al. (2005) discovered some types of software programs graphed students' responses which were displayed to the class in order for the students to see how well the class responded to questions. One type of software, ACTIVotes, allowed for students to vote for correct answers, and bar graphs were created on the interactive white board to reinforce correct answers. Many times classroom discussions occurred giving students the opportunity to explain their answers.

Auditory learning was also enhanced through class discussions using the interactive white board. As Levy (2002) pointed out teacher explanations are better when using the interactive white board due to the number of additional resources available. When teachers were able to explain things better, students listened better and retained more information. Painter et al. (2005) also addressed how much better quality the classroom discussions are when the interactive white boards were utilized. For example, students were more likely to explain their answers after seeing the graphs that show the students' responses. In the same study, it was reported students were also more likely to give suggestions to the teacher, such as what kinds of questions should be asked.

Tactile learners were able to actually touch and interact with the board with their finger or the special pens. Solvie (2004) stated students learning to read and write were able to write with their fingers on the board. This allowed for the students to feel the shapes of words as they wrote them. They could also feel and see the letters they made and the sounds they created. Students also stayed engaged by being able to respond to the text on interactive white board by highlighting words, drawing boxes or circles with their fingers. Painter et al. (2005) found tactile students were more involved in the lesson when they were able to take turns choosing and

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on the screen. Students who are deaf or learning impaired are usually strong visual learners. The interactive white board provided many visuals and it also incorporated sign language at the same time in front of the other students. Salinitri, Smith, and Clovis (2002) found vivid colors and the ease of pointing out dimensions in teaching geometry with the interactive white board kept students with special needs focused and less anxious in learning new concepts. Some students were able to better recall information due to color coded words displayed on the interactive white board. In the same study, it was also revealed that students were less likely to make errors in their own drawings of the geometric shapes because they had the print out of the various shapes to look at that were displayed on the interactive white board.

Students who have ADD or ADHD also benefited from the use of interactive white boards in the classroom. Jamerson (2002) found students with ADD or ADHD are less likely to have impulsive and disruptive outbursts when an interactive white board is used. Student who did exhibit those types of behaviors were not allowed to interact with the board by drawing or writing on it. Miller and Glover (2002) also stated children who did get easily distracted were paying attention for longer periods of time when an interactive white board was used. Salinitri et al. (2002) also found students with ADHD remained on tasks longer with the use of the interactive whiteboard as opposed to other teaching strategies. Helms-Breazeale and Blanton (2000) also determined from their study people with short attention spans can attend to any situation as long as it is on a television or computer screen. Interactive white boards provided students with this type of media.

Students with emotional behavior disorders (EBD) also reaped the benefits when interactive white boards were used during instruction. Students with EBD are often shunned by their peers because of their inability to exhibit appropriate social behavior which then leads to

aggressive behavior (Helms-Breazeale et al., 2000). According to Helms-Breazeale et al. (2000) the interactive white boards gave students with EBD the opportunity to remain in the regular education classroom and view peer leaders perform appropriate behaviors, which made it more enticing for them to perform the same desirable behavior as well. The interactive white board allowed for students with EBD to interact with their peers through collaboration and discussion. Students worked together discussing new ideas, and implementing them on the interactive white board or at the computer. Students with EBD were able to practice appropriate social behavior while also observing it from their peers.

As more and more children are diagnosed with autism, the need has never been greater to use technology to help these students learn and to interact with others. In fact, the Centers for Disease Control Autism and Developmental Disabilities Monitoring Network (2007) found about 1 in 150 eight year-old children in multiple areas of the United States are diagnosed with autism each year. Research from Wilcox and Flaherty (2007) reported students with autism increased appropriate social interactions while working with the interactive white board. The interactive white board helped create a playful atmosphere for students with autism. They did not feel overwhelmed, stressed, or frustrated. Instead, the students developed more confidence to engage with other people.

Preparing Students for the Future

Interactive white boards promote the computer skills students will need for success in the 21st century. According to Harris (1996), "Information Age citizens must learn not only how to access information, but more importantly how to manage, analyze, critique, cross-reference, and transform it into usable knowledge" (p. 15). Not only is it important students know how to use technology, but also how to use it to think critically and effectively use it to solve problems.

As students prepare for the future, it is necessary that they develop higher-order thinking skills through technology. Hopson et al. (2001) found while a technology enriched classroom had minimal effect on student acquisition of higher order-thinking skills, it still had a positive effect. The learning accomplished by the students in the study was more student centered focused more on application rather than just the acquisition of knowledge. Jonassen (1998) stated computers should be used to engage learners in reflective, critical thinking about the ideas they are studying. For instance, students creating a spreadsheet must analyze decisions and consider the implications of those decisions which entail higher level thinking. He goes on to report that computers should help students build knowledge. Students are responsible for recognizing the information and then organizing it so it makes sense to them.

The availability of large amounts of information allows for students to use the computer as a tool for problem solving. According to Wenglinsky (2005) students in middle school benefited when teachers use computers during instruction that promotes higher-order thinking. Stoney et al. (1999) reported students are the ones responsible for researching, making decisions, applying strategies, experimenting, and determining solutions when it comes to problem solving with technology.

Technology has been used to revolutionize education through 'learning by doing' (Richardson, 2006). As Wenglinsky (2005) stated, "Teachers should assign a research paper and take for granted that students will use computers in a variety of ways to complete the assignment. This approach mirrored the technology-rich work environment in which many students will find themselves after the graduation" (p. 64). It is vital for students to gain the necessary skills in order to use technology, but in order for students to obtain those skills, they must have access and exposure to the various forms of technology. Painter et al. (2005) stated it is the

responsibility of the teachers to help our students develop the information, literacy, problem-solving, collaboration, and creativity skills they need in order to be successful in the 21st Century. In order to be competitive in tomorrow's technological world, students must be exposed to more recent technology such as interactive white boards. According to Lemke and Coughlin (1998), technology increased the economic viability of the future workforce, motivated and engaged students in learning, and accelerated, enriched, and deepened basic skills. If the students are not exposed to more technology, they will lack some of the skills needed in order to compete in tomorrow's world. Wenglinski (2005) reported CEOs of major companies said they needed workers who can come up with creative solutions to complex problems. Borja (2006) addressed the comments from experts that students must learn 21st century skills such as how to be responsible leaders in on-line communities, how to make effective digital portfolios, problem solving, and effective communication.

Summary

There are many benefits to students and teachers by having interactive white boards and additional computers in the classroom. Additional use of technology in the classroom helps motivate students to learn, meet the needs of diverse learners and learning styles, and prepares students for the future by enhancing critical thinking and problem solving skills.

Becta (2003) stated increased student motivation as a positive result of using the interactive white board during lessons. Students enjoyed the lessons more and looked forward to displaying their projects on it as well. Teachers were motivated to use the interactive white board because of the ease of incorporating websites and videos into it as part of their teaching. Because textbooks become outdated quickly, many are left on shelves in classrooms collecting dust.

Educational websites, on the other hand, provide current, up to date information which can easily be shared with the entire class on the interactive white board.

Visual, auditory, and tactile learners can all benefit from a lesson that uses the interactive white board. Pictures, notes, diagrams, video clips, and maps can be displayed for the entire class to see. Sound including voices, music, and noises can enhance the presentation for auditory learners. The discussions that can evolve from the interactive white board can also benefit the auditory learner. Tactile learners can actually interact with the board by using the special pens to write on it or even using their fingers as the pens.

The interactive white board helps students with special needs in the regular classroom. Students who spend most of their energy just trying to copy notes from the board, can now absorb more of the content being discussed as notes from the interactive white board can be printed off. Students with vision problems can see the board better and images can be enlarged for students to see. There is software programs available to include sign language on the interactive white board for the students who are deaf or hearing impaired. Students with ADD or ADHD are able to get out their seat and interact with the board or computer. Students who lack appropriate social skills are able to observe their peers modeling those skills in the classroom. The interactive white board helps alleviate some of the stress and anxiety a classroom may exhibit by creating a more relaxed, playful atmosphere where they feel comfortable and are willing to take risks. As the world becomes more digitalized, the students must learn how to correctly use technology to solve problems and think critically.

Chapter III: Project Goals and Objectives

Technology in the classroom has many benefits for students including helping them develop problem solving skills, higher order thinking skills, and engaging students in their own learning. This chapter will discuss the three goals and their objectives of how the interactive white board and the additional computer in the classroom will be used to meet the needs of all the students. The first goal of this grant addresses the need for teachers to incorporate the interactive white boards in their lessons. The second goal of this grant will examine the outcomes experienced by the students due to increased technology in their learning. And finally, the last goal is to determine whether or not the goals and objectives were met by the teachers and students.

Teachers Will Develop At Least Three Lessons That Require The Use Of The Interactive White Board During The Cores Subject Areas Including Math, Science, Reading, Language Arts, And Social Studies To Seventh Grade Students.

The first goal pertains to the teacher's role in providing opportunities for students to experience technology in their classroom. Teachers must develop lesson plans in all the content areas so students can see how technology is not confined to only one or two subject areas. By having lesson plans that use technology across the different subject areas, allows for students to see and use it correctly in a variety of ways. The lesson plans developed will require the students to use problem solving and critical thinking skills. Teachers will use Bloom's Taxonomy to plan their lessons. They will need to identify which of the domains (knowledge, application, analysis, synthesis, or evaluation) they are addressing in the lesson for students.

Teachers will take part in a one day staff in-service given by Smart Technologies to learn how to use the interactive white board in their classrooms. This objective will help meet the first

goal and takes into consideration the teachers. Because of recent advances with regards to technology in the classroom, such as the implementation of the interactive white boards, teachers may not be aware of the technology available or how to use it. A representative from Smart Technologies will provide one day training on how to correctly use the interactive white board. He/she will discuss the basis of how it works including how to create dynamic presentations with objects, graphics, videos, etc. Teachers will also learn how to use other applications such as Microsoft with the interactive white board. The training will also provide time for teachers to practice using the interactive white board before they use it in front of the students.

After the training, the teachers will meet for two days developing ideas on how they can use the interactive white board to develop lessons that promote higher level thinking and problem solving skills. They will address which teacher(s) will address which domains of Bloom's taxonomy to ensure that all domains are being covered and not just one or two.

Students will be required to use two or more forms of technology in assigned projects in a unit that lasts one full quarter. This objective will also help meet the first goal by taking into consideration the students. By having students actually use technology to complete projects, they will acquire additional knowledge in not only learning facts, but also knowing how to effectively use technology to present information, research information, and how to solve problems using technology.

Data Will Be Analyzed To Determine Learning Outcomes.

Data will be compiled in order to see which areas with regards to technology need improvement based on students' work samples, participation during instruction with the interactive white board, and how teachers felt using the interactive white board during instruction. The information, including work samples from students, surveys, and teacher

reflections, determined here would help encourage the sixth and eighth grade teachers to use interactive white boards in the classroom.

Students will complete a reflection three times during the year summarizing what they learned about the core subject area using technology. This first objective focuses on the students' attitudes and thoughts about learning with technology. Students will provide teachers with their thoughts and feelings about the use of the interactive white board during class. They will also tell us how they felt about having the additional computer in the classroom for their use. Hopefully, they will include what they liked about it and what they didn't, and even some of their own ideas of how it could be better implemented. Teachers will meet together after going collecting the surveys. They will reflect and if need be, adapt future lessons with the interactive white board to better meet the needs of the students.

Student work will be collected and analyzed to determine the effectiveness of the interactive white board. This second objective will focus on the interactive white board and its effectiveness. After teaching with the interactive white board, student work will be collected and analyzed to determine whether or not students successfully completed the assignment or projects using the interactive white board and additional technology. Student's work will be assessed using rubrics developed by the classroom teacher which will address how well the student met the expectations. The rubrics will be developed using Bloom's Taxonomy and how the use of technology contributed to the student's final project.

Project Goals And Outcomes Will Be Viewed And Assessed By The Principle Investigator At The Completion Of Their Project.

The purpose of this goal is to determine the overall effectiveness of the use of the interactive white board during instruction by determining whether or not the project goals and objectives were met by teachers and students.

Surveys completed by students and staff will be analyzed to determine the success of the increased technology in the core classes. This objective will help determine whether or not the goals were met. Students and staff will complete surveys that will help determine whether or not the increased in technology helped students learn and retain information better. The surveys will also address how students were able to use technology to problem solve and how they will use what they learned with regards to technology application in future classes. Surveys completed by the teachers will allow for them to share their ideas and concerns they had while using the interactive white board during instruction. Teachers can also make recommendations on how to make the use of interactive white boards more effective. Solutions to problems encountered by teachers and students will also be collaborated.

The community, including parents, teachers, administration, and school board members will be invited to an Open House at the end of the year for students to show their projects through the various technology sources. This outcome will allow for other members of the school and community to see what students are learning about and how they can present that information using the interactive white board. Students will play and create a game with the members of the community using the interactive white board. Students will give the community members an opportunity to interact with the white board as part of their game. At the Open House parents, school board members, administration, and other members of the community will

see the effectiveness of such technology in schools, and hopefully, provide support behind more

technology throughout the district.

Chapter IV. Project Methodology

The purpose of the grant is to provide the Phillips Middle School with interactive white boards and additional computers in the classroom for student use to increase student achievement and exposure to recent advances in technology. Students will be able to develop higher-order thinking skills and problem solving skills through the use of technology. This chapter will focus on the action plan including the activities, persons responsible, and the timeframe to meet each goal and its objectives. The evaluation plan including tools to evaluate the grant as well as the dissemination plan and budget will also be included in this chapter.

Action Plan and Timeline

A number of activities will be conducted in order to determine the overall effectiveness of interactive white boards and additional computers in the seventh grade classrooms with regards to student achievement. The first activity that needs to be completed will be the interactive white board training for the seventh grade core subject teachers. The training will need to be completed before school starts so the estimated time will be August of 2008. Smart Technologies will provide one-day training. One additional computer for each of the four 7th grade classrooms should be provided before the start of school. The head of the technology department in the Phillips School District will take care of purchasing the equipment including four personal computers, four interactive white boards, four projectors, and four printers for the classrooms in July of 2008.

Due to the necessity of incorporating the interactive white board during instruction, the seventh grade teachers will be given one day during each of the first three quarters to develop at least one lesson that utilizes the interactive white board. Teachers will be given this planning day at least one month in advance of presenting to the class in order to solve any problems and

technical issues that may arise. The planning day will also allow time for the teachers to practice using the interactive white board. Students during this time will also be assigned a project in at least one core subject area that requires them to use at least two different forms of technology in order to complete it. Teachers will also document classroom activities that demonstrate the correct use of the interactive white board that involved students to use problem solving and critical thinking skills. They will keep track of different trends that they see, such as an increase in participation, less behavioral problems, and students staying on task. Each teacher must plan at least one lesson utilizing the interactive white board during each of the three quarters. They will need to submit a copy of the lesson plan, a copy of what was displayed on the interactive white board, a reflection of how they thought the lesson went, and student work samples. They will also need to state which higher level domain of Bloom's Taxonomy they will be addressing in the lesson and explain how it does just that.

In May of 2009, an open house will be held for the public displaying the projects students created using technology. Also at this time, students will complete a survey that addresses the effectiveness of the interactive white board to their own learning. Student work from teachers will also be turned in at this time to the Technology Sub-Committee that will be analyzed to determine the success of the increased technology in the core subject areas.

By July of 2009, presentations will be made by the Technology Sub-Committee to the Phillips School Board, technology committee, and to the special education department about the benefits of the interactive white board and additional computers in the classroom. The presentations will emphasize the need for these technology pieces in other grade levels.

Evaluation Plan and Tools

The effectiveness of increased technology in the core subject areas for seventh grade will be measured in three ways through the students and teachers. Teachers will be trained to effectively use the interactive white boards during instruction time and to develop quality lesson plans that utilize the interactive white board. They will then develop three lessons that require the use of the interactive white board. They will document the classroom activities that utilize the interactive white board and turn in the lesson plans that demonstrate the use of the interactive white board. Teachers will also complete a survey at the end of the year evaluating the outcomes of using the interactive white board in their classroom. This documentation will be compiled, analyzed, and presented to the school board and technology committee.

The student evaluation will be used to determine whether or not the use of technology helped increase their knowledge in one or more core areas. Students will be given two projects that will require the use of technology in a unit that lasts one full quarter. Projects may range from creating PowerPoint presentations, designing an educational game that requires the use of the interactive white board, establishing a web site set up and updated by the students pertaining to a topic for a core subject, finding and sharing web sites that pertain to the topic to the class, to teaching the class about a topic using the interactive white board. Student work samples will be collected throughout the year and analyzed at the end of the school year. Student projects will be on display during an Open House at the end of the school year for parents, administration, school board members, and the community to see. Students will also complete a survey at the end of the year to assess how technology helped them to learn. Lastly, students will write a reflection at the end of the year summarizing what they learned about the core subject through technology and how technology did or did not assist them in their learning.

A successful project will demonstrate less classroom disturbances, and students will remain on task longer during class, develop their problem solving skills, enhance their critical thinking, and increase classroom participation. A successful project will also show an increase in the level of interest in relation to technology of the seventh grade students the following year.

Dissemination Plan

The project dissemination plan entails several elements. The four seventh grade teachers will present the findings to the special education department at the Phillips School District in July of 2009 at the completion of the grant. The teachers will discuss how the students in special education responded to the use of the interactive white boards during instruction and how it helped enhance their learning in the regular classroom.

The seventh grade teachers will also present the findings to the Phillips School Board and administration at the regular school board meeting in July of 2009. They will demonstrate the use of the interactive white board during their presentation to show how it improved student learning in the classroom. Student work samples that used the additional computer in the classroom to be completed and the interactive white board will be displayed for all to see.

In addition to presenting the findings within the school district, a classroom website will be developed and maintained by the seventh grade students that exhibits how they use technology throughout the year. Projects, such as Power Point presentations created by the students, can be seen by accessing the web site. This will allow for parents and community members to see how the technology is being used by their children. The seventh grade teachers will also explain the benefits they have seen in their own classrooms on the web site.

Two of the seventh grade teachers will also present the findings at the Cooperative Educational Service Agency (CESA) #12 workshop that offers a variety of services to 18 public

school districts to meet their educational needs in the fall of 2009. The teachers will present their findings to teachers and administrators from these schools and discuss how the interactive white board and the additional computer in the classroom helped students learn and how it helped increase student motivation, how different learning styles were supported, how students with special needs benefited from the increased in technology in the classroom, and how the additional technology helped prepare students for the future.

Budget

Personnel Smart Technologies, the provider of the interactive white boards, will provide training for one day at the Phillips Middle School for the seventh grade teachers and an additional 11 more. The training will discuss how the interactive white board works and the basic principles of touch, write, and save. The teachers will also learn how to create dynamic presentations and how to use the tools that come with the interactive white board. The requested personnel budget is $1,300 which is the cost Smart Technologies charges.

Equipment The requested equipment budget is $17,400. This includes four personal computers, four printers, four interactive white boards, and four Dell projectors. The four personal computers and printers are for each of the seventh grade classrooms for student use. Dell computers are requested because the school district already utilizes Dell computers. The model proposed is the Dell Inspiron 530s which includes a 19 inch monitor, speakers, keyboard, mouse, and 2 GB. The cost for one is $549.00. The school district will cover the costs of additional software for the computers including Microsoft Office. The classroom budgets will cover the cost of the ink cartridges for the printers. The requested computer budget is $2,196. The four printers are also from Dell. The proposed model is the Dell 926 All-in-One printer. This

printer can print, copy, and scan which costs $49.00. The requested budget for the printers is $196.00.

The four interactive white boards are also for each seventh grade classroom for both student and teacher use. The proposed model is the Smart Board 660 which includes a 64 inch screen, four pens, an eraser, and a pen tray with sensors. The cost of one Smart Board 660 also includes the price of the necessary software needed to run it. Each board is $1,200.00, and the requested budget is $4,800.00. The four Dell 1201MP projectors are also for each seventh grade classroom to project material from a computer to the interactive white board for whole group viewing. It is high definition with built-in speakers. Each Dell 1201MP projector is $529.00, and the requested budget is $2,116.00.

Other expenses The requested budget for other expenses is $100.00. This includes the expenses for the Open House held in May for students to display their work that utilized some form of technology to the community including parents, teachers, school board members, and administration. Coffee, juice, and cookies will be served to show appreciation for attending the Open House. The cost of advertising the Open House including flyers and invitations will be covered by the Phillips School District.

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Appendix A: Cover Letter

July 2, 2008

The NEA Foundation
Attn: Student Achievement Grants
1201 Sixteenth Street NW, Suite 416
Washington, DC 20036-3207

Dear Sir or Madam:

The Phillips Middle School is pleased to submit a proposal to the NEA Foundation requesting $10,708.00 to improve the problem solving skills and critical thinking skills in the seventh grade students through the integration of technology in the core subject areas. As your guidelines requested, we are submitting our original application and five copies.

Phillips Middle School is located in rural Northern Wisconsin. The district provides learning opportunities for 920 students with 95 percent of the students being Caucasian and the remaining students are either American Indian or African-American. Thirty-seven percent of the students qualify for free and reduced lunch.

Phillips Middle School has received less and less state funding every year. With less and less money coming in, drastic cuts had to be made at the expense of the students especially with regards to technology. Currently, there are two computer labs in the middle school, but no computers in the classroom for student use. In order for students to gain the most from what is taught to them, they must be engaged in it. The use of interactive white boards along with other means of technology can help engage and excite the students about the world and their learning.

Technology plays a crucial part in today's world. It is vital that students gain the necessary skills in order to use technology. In order to obtain those skills, they must have access to the technology equipment. Students must have opportunities to learn how to use the different types of technology and how to use technology to solve problems in order to be successful in today's world.

Funding would allow the entire seventh grade student body to receive instruction utilizing interactive white boards in the core subject areas that is not currently possible. The benefits of such materials and instruction are outlined in the proposal.

Thank you for your consideration of this proposal. Please contact Stephanie R. Ernst, seventh grade social studies teacher, to answer questions or provide further information—phone: (715)339-3393 or email: sernst@phillips.k12.wi.us. We look forward to working with you on this important matter.

Sincerely,

Stephanie R. Ernst
Seventh Grade Teacher

Appendix B: Grant Foundation Proposal Request

Applicant Data Sheet, page 1

Indicate the grant category your application addresses. **Select only one category,** and follow the guidelines for that category.

(1) D Learning & Leadership (Q Individual or Q Group)

(2) [X] Student Achievement

Lead applicant: D Ms.   ^ Mrs.   D Mr.   D Dr.   Full name: Stephanie Rose Ernst

Home address: 11704 Liberty Road

City: Butternut   State: WI   Zip: 54514

Home telephone: (715)769-3580   NEA Membership Number or the last 6 digits of your *Social Security Number: 863074

School/institution: Phillips Middle School Work address: 365 HWY 100

City: Phillips Work title: Teacher Work fax:

For teachers, what do you teach? Subject(s): Social Studies, Science

State: WI   Zip: 54555

If applicable, what is the percentage of free and reduced school lunch students in your school?

Work telephone: (715)339-3393

E-mail address: sernst@phillips.k12.wi.us

Are you a member of the National Education Association (NEA)? O Yes D No   Grade(s): 6, 7

Are you a graduating NEA Student member with a signed teaching contract? D Yes ^ No

Are you a member of the American Federation of Teachers (AFT)? D Yes E3 No

Years work experience in education: 5

Grants payable to individuals will be reported to the Internal Revenue Service and may be considered taxable income. For approved applications, The NEA Foundation will make the grant payable to the lead applicant _unless_ you designate a fiscal agent in this section. Grant funds may not be used to pay indirect costs.

Name of the organization serving as fiscal agent: Phillips Middle School

Address: 365 HWY 100

City: Phillips   State: WI   Zip: 54555

I agree to act as fiscal agent for this grant and to comply with the following conditions:
- to maintain separate records of disbursements related to this grant   - to disburse funds:

- to keep receipts for at least three years   (1) in accordance with the purpose of this application

- to make financial records available as requested   (2) solely at the direction of the grantee(s)

Signature of an authorized representative of the organization: _____

Please print or type the name of the authorized representative:_____

Lead applicant's signature: Date:

Principal or dean's signature:.   Date:

Appendix C: Project Time Line

Project Time Line

August 2008	September 2008	November 2008	January 2009	February 2009
1. Interactive white board training for seventh grade teachers by Smart Technologies 2. Two days for seventh grade teachers to plan and develop lessons using the interactive white board that help students develop critical thinking and problem solving skills	1. In-service day for seventh grade teachers to develop one lesson that utilizes the interactive white board 2. One additional computer is provided for student use in each seventh grade classroom	1. Teachers implement the interactive white board during at least one lesson 2. Students use at least two different forms of technology to complete one assigned project for one core subject area; complete surveys for teachers. 3. Teachers will document classroom activities that demonstrate the use of the interactive white board 4. Teachers meet and discuss results of surveys from students regarding changes that need to be made	In-service day for seventh grade teachers to develop the second lesson that utilizes the interactive white board	1. Teachers implement the interactive white board during at least one lesson 2. Students use at least two different forms of technology to complete one assigned project for one core subject area; complete surveys for teachers. 3. Teachers will document classroom activities that demonstrate the use of the interactive white board 4. Teachers meet and discuss results of surveys from students regarding changes that need to be made

March 2009	April 2009	May 2009	July 2009
In-service day for seventh grade teachers to develop the third lesson that utilizes the interactive white board	1. Teachers implement the interactive white board during at least one lesson 2. Students use at least two different forms of technology to complete one assigned project for one core subject area; complete surveys for teachers. 3. Teachers will document classroom activities that demonstrate the use of the interactive white board 4. Teachers meet and discuss results of surveys from students regarding changes that need to be made	1. An Open House will be held for the public displaying student projects that required the use of technology 2. Students will complete a survey pertaining to the use of the interactive white board 3. Teachers will complete a survey that will evaluate the outcomes of using the interactive white board 4. Surveys and student work will be analyzed to determine the success of increased technology in the core subject classes.	1. Presentation to the School Board about the benefits of the interactive white board and additional computers in classrooms 2. Presentation to the technology committee about the benefits of the interactive white board and additional computers in classrooms 3. Presentation to the special education department at the Phillips School District about how the use if the interactive board helped students with disabilities learn and perform better.
*Student work samples will be collected throughout the year that show evidence of technology to complete them			

Appendix D: Budget

Budget

I. Personnel

Description	Quantity & Cost	Budget Request
Interactive white board training provided by Smart Technologies	1 day of training @ $1,300 per day	$1,300.00

II. Equipment

Description	Quantity & Cost	Budget Request
Additional computer for student use in each seventh grade classroom	(4) Dell Inspriron 530s Desktops @ $549.00 per computer	$2,196.00
Additional printer for student use in each seventh grade classroom	(4) Dell 926 All-In-One Inkjet Printers @ $49.00 per printer	$196.00
Interactive white board for each seventh grade classroom	(4) SMART Board 660 Interactive White Boards @ $1,200.00 per board	$4,800.00
Projector for each seventh grade classroom	(4) Dell 1201MP projectors @ $529.00 per projector	$2,116.00

III. Other Expenses

Description	Quantity & Cost	Budget Request
Refreshments and supplies for the Open House	Cookies, juice, and coffee to be served at the end of the year Open House	$100.00

Total Requested Budget	**$10,708.00**

Appendix E: Project Evaluation Tool

TEACHER SURVEY
INTERACTIVE WHITE BOARD
END OF THE YEAR

1. Core subject area(s) you teach: _____

2. Average number of students in one class: _____

3. Give one example where the interactive white board was critical in your instruction.

4. Give one example where the interactive white board facilitated student learning.

5. Give one example where the interactive white board frustrated students.

4. How did the students respond to the interactive white board intellectually?

5. What did the students learn from using the interactive white board?

(Continued on the back side)

6. On a scale of (low) 1-5 (high) what were the students comfort levels using the interactive white board?

5. What are the benefits to using an interactive white board?

6. What are the drawbacks to using an interactive white board?

7. What did you like best about using the interactive white board?

8. Do feel that you received adequate training for the interactive white board? If not, what improvements could be made?