An Examination of Professional Development and the
Effective Use of Interactive Whiteboards

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Quote Slip

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ABSTRACT

With Federal and State standards placing a significant emphasis on the need to prepare students to become productive, functioning adults in the 21st century, it is no longer a question as to whether technology should be included in public school instruction. The challenge now is determining how technology is going to be integrated across curricular areas to insure that all students are ready to face the complexities of society which are certain to be a part of their futures. Beginning in 2007-2008 a suburban school district conducted a pilot program incorporating interactive whiteboards to enhance technology, instruction and student learning.

The purpose of this descriptive study is to identify the specific needs of the teachers and to develop a plan to support their efforts in implementation. More specifically, how will these teachers receive sufficient training so that their use of the boards is maximized, encourages active involvement on the part of the students, and integrates the use of technology across content areas?

Data sources included (a) surveying teachers who currently use the IWBs in their classrooms (b) interviewing technology supervisor in the school district, and (c) conducting teacher interviews that focused primarily on the use of Interactive Whiteboards, and professional development interventions incorporated since 2007.

Results of this study indicate that in general, teachers have felt the support they have been provided has been useful and has increased their confidence level in using the boards in the classroom.

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Chapter 1 - Introduction

With Federal and State standards placing a significant emphasis on the need to prepare students to become productive, functioning adults in the 21st century, it is no longer a question as to whether technology should be included in public school instruction. The challenge now is determining how technology is going to be integrated across curricular areas to insure that all students are ready to face the complexities of society which are certain to be a part of their futures.

In 2002, President Bush signed into law the No Child Left Behind Act (NCLB). Specific goals for Enhancing Education through Technology were outlined in Title 2, section D (Office of the Under Secretary, 2002). The objectives include the following:

- To improve student academic achievement through the use of technology in elementary and secondary schools

- To assist every student in becoming technologically literate by the end of eighth grade

- To encourage the effective integration of technology resources and systems with teacher training and professional development to establish research-based instructional methods

The U.S. Department of Education worked with The International Society for Technology in Education (ISTE) in formulating the NCLB guidelines. In June 2007, this organization released updated standards for students. "The new standards focus on creativity and innovation, communication and collaboration, research and information fluency, critical thinking, problem solving and decision making, digital citizenship and technology operations and concepts" ("Understanding the No Child Left Behind Act," 2008). These are considered to be the new standards by which students' technological literacy will be measured.

The state of New Jersey has gone as far as creating a separate set of standards that address technology concerns. Standard 8.1 outlines the objectives for technology literacy and focuses on progress indicators that lead students to use technology for information-gathering, organizing, and problem solving. Standard 8.2 outlines the objectives for technology education and focuses on progress indicators that address students' understanding of the impact technology has on individuals, society and the environment (New Jersey Department of Education, 2004). These standards were specifically designed to insure that the use of technology be integrated and applied across all content areas. In describing the integrated design for technology literacy, the NJDOE (2004) states, "Integration is the connections between content and learning experiences in the curriculum" (p.1). Recent emphasis on integration in the various school reform efforts has been brought about as a way to help improve learning outcomes and to provide more authentic and relevant experiences for the learner." This model is supported by The Office of Educational and Informational Technology of the NJDOE.

Obstacles to Implementation

Significant emphasis is being placed on preparing students to be technologically literate as they enter the workforce. But who is providing the instruction to these students to insure their preparedness? Many school districts have incorporated isolated computer education classes into their curricular offerings and these courses are generally taught by technologically trained educators. Integrating technology into the content areas is a more difficult challenge since it requires educators to become proficient in a field that may not be their area of expertise or even an area of interest. "Surveys consistently show that teachers are interested in technology, but need increased opportunities to develop their capacities. Only 20% of teachers consider

themselves well prepared to use technology in their classes" (Cradler, Freeman, Cradler, & McNabb, 2002, p. 50). It is essential that schools work toward addressing the needs of teachers so that they have the required skills, knowledge and attitudes that will in fact lead toward technology integration and positively impact student achievement. Supporting teachers as they learn to use technology is critical. "Teachers require prolonged exposure to new ideas and skills before classroom behaviors change. It has been found that for teachers to feel in command of educational technologies and to know when and how to use them can take as long as five to six years" (Baylor & Ritchie, 2002, p. 395).

Need for this Study

The suburban district within which this study will take place is a District Factor Group 1, which is considered to be one of the more affluent in the state of New Jersey. The district consists of one K-1 early childhood center, three 2-5 elementary schools, one 6-8 middle school and one 9-12 high school servicing approximately 2,600 students.

The school district has in place a three year (2007 -2010) comprehensive technology plan that was developed by the Technology Advisory Board using the framework provided by the state of New Jersey. The Advisory Board consists of members representing each of the schools served.

In developing the plan, an inventory of staff proficiencies was conducted using the Taking a Good Look at Instructional Technology (TAGLIT) evaluation tool. Through classroom observations and lesson plans it was determined that the majority of teachers fall into the progressing level of proficiency which states, "The staff member is making some effort and showing some progress using technology for teaching and learning" ("Three-Year Local School

District Charter School Technology Plan," 2007, p. 14). The plan also noted that, while teacher use may be high, the methods of use are more task-oriented rather than for promoting higher order thinking skills.

During the academic year 2007-2008, the district conducted a pilot program incorporating interactive whiteboards to enhance technology, instruction and student learning. The initial objective was to determine where to place the boards to insure maximum use. One board was placed in a library, one board was placed in an empty classroom where all teachers could sign-up to use the board, and one board was placed in a self-contained classroom. From this pilot it was determined that the most effective use of the board occurred when in was in a classroom and the teacher had access to it at all times.

The district is now moving in an aggressive manner to install interactive whiteboards in more classrooms. In September 2008, a total of eleven boards were installed across the district. The question presented here is how will these teachers receive sufficient training so that their use of the boards is maximized, encourages active involvement on the part of the students, and integrates the use of technology across content areas?

Problem Statement

It appears that eighteen teachers within this District Factor Group 1, northern New Jersey school need support to successfully implement interactive whiteboards in the classroom. This is indicated by the teachers' perception that continued opportunities to learn and collaborate are needed. Teachers have expressed their uncertainty with their abilities to incorporate the boards successfully in the classrooms. The purpose of this descriptive study is to identify the specific needs of the teachers and to develop a plan to support their efforts in implementation.

In order to achieve this goal, the following questions will be researched:

1. What is the current plan for continued teacher support in the use of interactive whiteboards?

2. What are the teachers' perceptions of the current plan and/or their needs for professional development in the use of interactive whiteboards?

3. What additional resources are necessary to insure the teachers' optimal use of the interactive whiteboards?

4. How can training be differentiated to meet the specific needs of individual teacher users?

Attempts to answer these questions and to develop a plan that fits the needs of the teachers, students, and district will be obtained through a variety of methods including secondary research, focus groups, interviews, and surveys.

Chapter 2 – Methodology

The action research project will take place in Berkeley Heights, New Jersey. Berkeley Heights is a township located in Union County. According to a census report conducted in 2000, there were 13,407 people residing in the town ("Berkeley Heights, New Jersey", 2009). The predominant racial group of the township is Caucasian which make up approximately 89.65% of the population. The percentages of other groups living in the town are 1.11% African American, 3.68% Latino, 0.08% Native American, 7.87%, Asian, and 0.61% from other races ("Berkeley Heights, New Jersey", 2009).

The census report also stated that 4,479 households were located in the township. Of these households, 41.5% had children under the age of 18 living with them. The average household size was 2.89 while the average family size was 3.21. A household in the township possessed a median income of $107,716. The median income for a family was $118,862. "The per capita income for the township was $43,981. About 1.5% of families and 2.1% of the population were below the poverty line" ("Berkeley Heights, New Jersey", 2009).

The Berkeley Heights public school system provides education to children through the ages of preschool to twelfth grade. There are six district school buildings within the town. Berkeley Heights contains an early childhood center, three elementary schools, a middle school, and a high school. The New Jersey Department of Education has designated the town as having a District Factor Grouping (DFG) of I. DFG is a system that provides a means of ranking school districts in New Jersey by their socioeconomic status (New Jersey Department of Education, 2006). The groupings range from A to J where A indicates the lowest socio-economic status.

Presently, IWBs are located in five of the district's school buildings. IWBs are installed in the early childhood center, the three elementary schools, and the middle school. All IWBs are

products of Promethean. Promethean is a company that manufactures and develops specific

IWBs ("About Promethean", 2009). Promethean's IWBs are referred to as ActivBoards. When

installation for the IWBs began, the Technology Specialist Coordinator proposed that the IWBs

be set up in two types of environments. Some of the IWBs are located in all purpose rooms,

such as the media center, while others are placed in individual classrooms.

In this district, the teachers who currently use IWBs in their classrooms are grouped into

two cohorts. The cohorts represent teachers from the middle school, three elementary schools

and the early childhood center. Cohort 1 is made up of five teachers who began implementation

of the IWB in their classroom during the 2007-2008 school year. Cohort 2 is made up of thirteen

teachers who implemented the IWB in their classrooms during the 2008-2009 school year.

Teachers from both cohorts will be invited to participate in the study and participation will be

voluntary.

To begin the action research planning process, the group chose a descriptive research

model as the most appropriate research format for the intended study. From the Action

Research Power Point presentation, a descriptive study identifies an issue or a problem. Part of

the plan is to gather internal data and external data related to the problem. The data is then

organized and analyzed. Finally, a course of action is recommended and findings are reported

and recommendations are made. The intention of a descriptive study is to study the present status

and establish trends, formulate a basis for planning and provide basic fundamental research.

There are two other research models that were considered. From Sager, an experimental

study formulates a goal or hypothesis with a formulated action plan to achieve the goal. It

gathers internal data to establish existing conditions and external data related to the problem.

Research can be represented with a control group and an experimental group. The results are examined to determine the accuracy of the hypothesis. Finally, conclusions are drawn.

The third type of research format is the case study. This method identifies an individual or small group to be studied. A case study would have its roots in a clinical observation. It is a qualitative analysis that involves a complete and careful observation. The recording would include the problem, the observations and the plan for remediation. The findings of a case study are stated verbally not numerically. The group must respond objectively to the research questions. Finally, the implications of the findings are determined (Lauer, 2004).

In order to address the specific needs of the teachers and develop a plan to support their efforts in the implementation of the IWB data will be collected. Based on the four research questions, the appropriate method of data collection was determined (Appendix A). Data will be collected from teachers who currently use the IWBs in their classrooms. Data will also be collected from the technology supervisor in the school district. Approval will be received from the building principals prior to data collection.

Through the use of the interview process data will be collected to assist in answering the questions in the problem statement. The technology supervisor will be interviewed to obtain the data for the current plan for support in the use of the IWB (Appendix B). The interview process will also be used to gather data from teachers who currently use the IWBs (Appendix C and Appendix D).

Survey will be another method used for data collection. With permission from the technology supervisor, the survey will be posted on MyLearningPlan.com, a web-based service for tracking Professional Development activities for the district. The survey will consist of questions that will address each of the research questions (Appendix C). First, teachers will be

surveyed as to their knowledge of the current plan. The teachers will provide data regarding the teacher's perception of the current plan and need for professional development. The additional resources that are necessary to insure the optimal use of the boards and how training can be differentiated to meet the specific needs of the individual users will also be collected in data through the survey.

Data will be collected from a focus group made up of members from cohort one and two. The cohorts meet monthly for collaboration and problem solving. It will be during one of these meetings that a focus group will meet. The focus group will be facilitated by members of the action research team, who also act as members of the cohorts. One of the action research members will ask the questions and another will act as the recorder to write down answers and comments (Appendix D).

Chapter 3: External Research Review

Introduction

The purpose of this review is to examine the existing literature on the implementation of the interactive white board (IWB) in classroom settings. The content of the review will include literature on the initial adoption of the technology in the classroom, professional development models that are available, uses in the classroom, perceptions by teachers and evidence on the impact of teaching and learning.

Introduction of new technologies such as the IWB within the classroom context raises questions regarding the ways in which pedagogic practice may be supported and enhanced; this being the focus, specifically the links between three areas; whole-class direct teaching, creativity and the integration of technology.

The Adoption of the Interactive Whiteboards in the Classroom

In recent years, there has been a growing level of interest in the electronic or interactive whiteboard, well documented by the educational press. The components of an IWB are comprised of a three-way system between data projector, computer and an electronic screen. Once in place the IWB allows an individual to interact with software at the front of a class rather than from the computer. Effectively, the computer screen is projected onto the electronic whiteboard and presented to the class with the teacher, or perhaps student, selecting, activating and interacting with the programs (Wood & Ashfield, 2008).

The potential for the IWB is based on its enormous capabilities because of the vast amount of features available. The IWB is well-adapted to whole-class teaching (Glover & Miller, 2001), especially in the ability to foster demonstrations (Stephens, 2000), and presenting

information in a variety of ways making the lesson more appealing for the students. In respect to learning, the interactive use of the IWB has the potential to meet the needs of a wider range of learners and impact classroom management. The IWB makes it much easier to incorporate a wide use of multimedia resources in lessons such as text, pictures, video, sound, diagram, and online websites (Johnson, 2002). The resources are attractive to both teachers and children and captures the students' attention more strongly that other classroom resources (Smith, Higgins, Wall, & Miller, 2005). Miller has identified six common techniques that are used in the lessons with an interactive whiteboard. They are drag and drop, hide and reveal, color, shading and highlighting, matching equivalent terms, movement and animation, and immediate feedback (Miller, 2004).

Presentation systems are an exciting and expanding mixture of educational tools growing from computer, projection, and other technologies. There are several advantages to using interactive whiteboards over traditional boards when teaching the curriculum. These include the ability to write on touch-sensitive surfaces, save documents, and simultaneously display multiple documents.   Additionally, the features of the board make accommodations and modifications for students with learning disabilities since interactive whiteboards allow teachers to demonstrate processes on the board while students follow along on worksheets or in notebooks (Mounce, 2008).

The flexibility of the IWB creates many possibilities. Users can control programs with a click and drag, mark up or annotate text and images, or use optical character recognition features on a computer-generated image displayed on or behind a touch surface. The projectors used with interactive whiteboards offer even more possibilities. They can be connected to (and project

from) video recorders, DVD players, and more, or they can be connected to a school network digital video distribution system (Doe, 2007).

An example of how one could use the IWB during an elementary math lesson would be to using a graphing program. The class is able to conduct a survey as a whole group, while the teacher demonstrates how to enter the data on a graphing program. Students can then create and conduct a survey of their choice (i.e., favorite colors, favorite sports) using the interactive whiteboard.

Geometry involves multi-dimensional shapes, symmetry, and measurement. Displaying images (i.e., three-dimensional shapes) that are difficult to display on a traditional board is made feasible using an interactive whiteboard. For example, a fifth grade class was introduced to lines of symmetry using multiple shapes. The interactive whiteboard enabled the teacher to draw on the shape using different colored fonts to demonstrate how to count sides, corners, and lines of symmetry. Further, using animation, each shape was folded to show students each line of symmetry. Following instruction, the teacher allowed students to play an interactive game located on the Internet as a whole class on the board. Students were actively involved in the lesson and provided visual assistance that enabled them to identify and apply the concept of symmetry. Upon completion of the game, students were asked to identify shapes throughout the classroom that had lines of symmetry (Mounce, 2008).

Teachers can create interactive games for the whiteboard using common software such as Excel or a multimedia presentation program such as PowerPoint. Creating games using PowerPoint can increase student interest, participation and quality of images while at the same time reducing transition time between lesson activities (Grabe & Grabe, 2004). Interactive games created in Excel or PowerPoint enable students to actively practice skills, review content,

and demonstrate knowledge. Game templates (i.e., Jeopardy, Who Wants to be a Millionaire) may be downloaded from various Web sites, and teachers can create activities that contain skills specific to academic units. Pairing these newly created presentations and games with an interactive whiteboard allow students to learn through active learning and can increase student participation (Mounce, 2008).

One of the most common advantages noted was the impact the IWB has in motivating students (Ball, 2003). Teachers are able to use the boards to model abstract ideas in a way that students might be given a deeper understanding. The pace of the lessons can be increased since the lessons can be pre-made, there is no time spent producing the lessons on the chalkboard (Miller, 2003). Lesson transition can be smoother, using the previous lesson for reinforcement or to extend learning.   An advantage to the use of lessons on the board is the ability to share and reuse the lessons. Research favored the relatively easy use of the boards compared to other technology that some teachers struggle to use (Smith et al., 2005).   Such features as clip art images and photos, sound, animations, video and hyperlinks were all commented on by the teachers interviewed as elements that served to enhance their teaching. They felt that the use of these features helped to capture the children's attention, maintain their concentration and motivate them to learn.

Student response systems are often included with an IWB. With these devices, teachers are able to present material and receive feedback from their students. The units enable students to answer test questions posted on the whiteboard, work on puzzles, solve math problems, take part in polls and surveys, and more (Doe, 2007).

Some teachers and student teachers highlighted the fact that good visual resources supported the 'visual learners' within the class, and that those images displayed on the IWB were

often a better quality than alternative resources such as overhead transparencies, posters and photocopied worksheets. In their view, this improved the quality of pupils' learning. Both teachers and students felt that the IWB and associated software enabled them to create 'lively and exciting lessons', drawing on video clips, photographs, animations and text from a variety of sources.

Research appears to highlight the way in which the IWB could support a teacher's preferred style of whole-class interactive teaching. In general, all of the individuals interviewed and observed felt that the IWB had enhanced whole-class teaching and learning. It is essentially the teacher who determines what resource to use and how it will be utilized. The quality and clarity of multimedia resources may offer enhanced visual material for presenting to a large audience, and the teacher is able to move between varieties of electronic resources, with greater speed in comparison to non-electronic resources, with opportunities to edit, record, and retrieve data represented.

There were some disadvantages of IWB that the research has shown, most of which were practical issues related to the IWB. The cost of the boards is expensive, especially when compared to other technology that can be used for displaying computer output. IWBs can be difficult to maintain, especially when not in use or when in a classroom with a teacher without the necessary skills. There is some difficulty getting the right height for the children and teachers, lighting and seating arrangement (Smith et al., 2005). Research also pointed out that initially, preparation for lessons took longer and time was needed to become proficient in the use of the IWB board.

Empirical Evidence about the Impact of the Interactive Whiteboards

Research has cited the importance of positive support for the teachers. Surveys have revealed that that without support, teachers are not necessarily using the IWB interactively. The research also suggested that without support, the teachers could reinforce a teacher-centered style of instruction as the only method used (Glover & Miller, 2003). It is from another perspective, that a study found that the lessons students were most positive about were those that were used least for its interactive potential and most for use in presenting multimedia resources (Beeland, 2002).

There is mixed literature on evidence of the positive effects on student learning. There is much evidence throughout literature that supports the positive effect on student motivation. There is a smaller amount of research that has been done on the actual effects on learning. There was a study in 2001 that suggests that measurable enhancements of low-attaining learners' performance at the beginning of their school career (Clemens, Moore, & Nelson, 2001). More often, was that both teachers and students were positive about students' motivation and attitudes and found no clear benefits associated with the use and increased learning (Beeland, 2002). Research that is available has been characterized as being somewhat small scale, often using action research as a methodology and conducted by enthusiastic innovators (Glover & Miller, 2003). More research is needed to show if there is a significant or even measureable impact on achievement. Research has yet to prove what direction teachers need to take to ensure that this is happening.

In 2005, there was a large-scale study done in the UK evaluating the impact of use in primary school. In this program in England, all classes of 5 and 6 year olds in 70 primary schools that covered 6 regions were installed with IWB. The study gathered information using

an online diary for a six-week period in year one and a six-week period in year two. The data

showed that there was an increase from 66% of lessons taught used the IWB to 74% taught on

the boards a year later. Research showed that teachers were more involved in developing and

adapting resources in year two suggesting a greater level of confidence and skill in the use of the

technology (Smith et al., 2005).

Research also investigates the students' and the teachers' perceptions for use of the IWB.

Both were impressively positive, but teachers found that the boards more benefited the pupils

and their ability to learn (Higgins, Beauchamp, & Miller, 2007). Bell completed a research study

on the perception on the value of the IWB. Data was collected from a survey via the internet. It

was a smaller study with 30 teacher participants over a nine-day period. The responses indicated

a high level of satisfaction with both the board and its features. Participants were positive in

their estimates on the value of the boards as an instructional tool. Finally, they shared the

students' perception that they enjoyed using the board and were very receptive to instruction that

involved the board (Bell, 1998).

Professional Development Defined

What is it that districts are intending to accomplish by providing professional

development opportunities for their teachers and staff members? Hopefully it is more than an

obligatory response to state and federal mandates for highly qualified teachers. Christine

Lowden reports that, "Much of the literature and research states that the goal of professional

development is to provide opportunities for teachers to learn and grow within the profession,

thereby making an impact on student learning" (Lowden, 2006, p.62). The significance of this

definition is that it implies that the learning is not individualized, that it occurs within a greater

body called the profession, and that the critical result is not the increased knowledge obtained by the teacher but the impact that new knowledge has on the students' learning. If this definition is considered to be legitimate, then it would make sense for a district's professional development plan to be directly related to its mission statement as well as its curriculum documents. Simply stated, it is all about the students. "District-wide goals for student achievement should be the basis for all planning, especially professional development" (Sanborn, 2002, p.16). Taking this one step further, if the fundamental objective is to increase student progress, and if teachers are ultimately the ones who are guiding that learning process, it would seem crucial that teachers are adequately trained, supported, and monitored to insure the success of the children. Having said that, it would be important to know what teachers need in order to accomplish this goal. How can teachers effectively incorporate and maintain new, research-based teaching strategies into their instruction? "Instructional improvement takes place when teachers improve their decision making about students, learning content, and teaching. The process of improving teacher decision making is largely a process of adult learning" (Glickman, 2007, p.52). Adults learn differently, and this needs to be considered for professional development to be effective.

Teachers as Adult Learners

There are many theories about adults as learners, each having a stated set of characteristics. Those that have the greatest impact on professional development include:

- The diversity of life experience, educational and cultural backgrounds, and personalities that adults bring to the learning environment
- The adult's need for a purpose
- The adult's need to be actively involved in the learning process

- The adult's need to immediately put their learning to use in meaningful and practical ways

Adults bring to the learning table a wide range of experiences and a wealth of professional knowledge that can be tapped as a valuable asset. This suggests the possibility of a sharing of experiences and reflects the underlying idea behind the concept of situated cognition. This theory suggests that "learning is inherently social in nature. The nature of interaction among learners, the tools they use within these interactions, the activity itself, and the social context in which the activity takes place shapes learning" (Hansman, 2001, p.45). Also, if the experiences and knowledge base of the teaching staff are recognized as having value, then the professional development objectives could be enhanced by "allowing adult learners to share in the design, process, and evaluation of their learning activities" (Hansman, 2001, p.49). Involving teachers in the entire process would likely increase their understanding of the goals and therefore their commitment to implementing change.

Adults need to believe there is a purpose involved in the learning process. "Teachers need to be able to answer the question, 'How will my students be better off if I do this' (Sanborn, 2002, p. 17). In addition, it is important that the purpose of the professional development is seen as valuable by other members of the community, that there is a commitment to the process, and that the "proposed strategy or initiative will address a particular problem or issue in their school" (Sansborn, 202, p.18).

Lawlor (2003) agrees that adult learners need to be actively involved and states:

> These individuals are accustomed to taking charge in their daily lives. Their
> professional responsibilities demand them to be active in their organizations as
> they make decisions on program and curriculum content, assess student and
> participant learning, and seek new ways to work with their students. Being

respectful of their professional expertise by inviting their participation and

collaboration encourages learning. (p. 17)

Adults look to make connections between their learning and their educational and life

experiences. "Adult learning needs to be put to use in some practical and thoughtful way"

(Lawlor, 2003, p.19). This is why the best place for learning to occur is in the classroom. Being

able to actually use what is learned validates the investment of time spent in the learning

process. A major concern here is that executing change is a long and challenging process. In

order for a teacher to continue using new strategies learned, the strategies not only need to be

viewed as valuable and be able to be used for practical reasons, but teachers need time and

support to practice these new strategies in order for them to become truly effective.

Assuming that supporting teachers' continued growth and change is valued as a way to

improve student achievement, it becomes the responsibility of the supervisor to insure the

changes that are established for school improvement are implemented and sustained. "Well

designed, thoughtfully planned, and adequately supported professional development is a

necessary ingredient in all educational improvement efforts" (Lowden, 2006, p. 61).

Professional Development As It Pertains to Technology

The IWB is only as effective as the instructors using them. To use the boards to their

fullest effect, teachers must receive proper training. In order to use an IWB, teachers require

some computer skills, and many resources for the whiteboard require the skills to manipulate

software applications (Cogill, 2003). And with all the things an IWB allows a user to do--

manipulate text and images; save notes for review via e-mail, the web, or print; show and write

notes over educational video clips; use presentation tools to enhance learning materials;

showcase student presentations--it is essential to offer professional development and training. School districts are increasingly recognizing this, making training compulsory before instructors are let loose with the technology (O'Hanlon, 2007).   It may be argued that those who still resist the use of technology because they are not convinced it will add significantly to the quality of their teaching may not change their mind until they see practical and stimulating examples of effective interactive whiteboard use in their subject areas (Cogill, 2003).

Teachers surveyed regarded the time "to play" with the IWB equally important to training during the early use of the board so that they could find their way round, discover its potential and reflect on how to integrate it with their teaching (Cogill, 2003). Teachers who only have occasional access find it difficult to gain the experience required to feel confident using the board. The potential to develop students IWB abilities and allow them more involvement in the classroom can be allied to teacher development (Beauchamp, 2004). Beauchamp proposes a transition framework based on research moving from the IWB as a "substitute for a tradition backboard or chalkboard through stages where both the teachers and students are able to construct meaning and dictate instruction, scale the next step of the lesson across the dimensions of technical, mechanical, software and pedagogical competences" (p. 344).

Researchers have examined the process of teacher development in both the area of introduction and the development of use. The research focuses on technical and pedagogical change as well as the students' position on their use of the technology. A number of models have been outlined in research that is available. The finding in research was consistent that the training for IWB for new users was best when it takes place in small steps every couple of months. Also noted is that educational leaders at all levels are increasingly providing professional development workshops throughout the school year, purchasing equipment and

software, and allowing teacher release time for practicing technology skills (Becker & Ravitz, 2001).

According to Stephen T. Adams (2005) it is important to also look specifically at professional development as it pertains to technology. Adams conducted a case study that evaluated a field-based strategy for training in-service elementary teachers to use technology. This professional development involved a technology course taken by a cohort of students in an onsite M.A. program in Curriculum and Instruction. Participating teachers identified topics of interest and, in teams, taught one another both computer and technology integration skills.

Professional development schools represent a promising type of partnership between universities and K-12 schools for improving teacher training (Darling-Hammond, 1997). One model for training teachers using technology involves an integrated approach in which teachers learn with technology in their content-area courses and proceed through a series of stages leading to teaching using technology (with scaffolding from a mentor), ultimately teaching independently with technology (Adams, 2005).

In this particular case the technology training took the form of a course (also taught on site) developed in consultation with other participating university faculty, the school principal, and also, significantly, the participating teachers themselves. The course met once per week at the school site for 16 weeks, from January through May of 2003.

Like other technology courses, the goals of the course included developing teachers' technological skills and their capacity to integrate technology into the curriculum. However, the course differed from traditional approaches in that it also included goals that were more organizational in nature, goals that were directed not toward a particular technological skill or method but to the establishment of patterns of support among the teachers in the area of

technology.

A key principle guiding the design of the course was to enlist the participating teachers as collaborators. The present project incorporated a participatory approach in which the instructor and the cohort collaborated in the design and teaching of the course. At the beginning of the course, the instructor led an activity to identify a range of possible topics and to survey the extent of the interest in each. Subsequently, course participants were given substantial responsibility for teaching the course. The class formed teams and each team identified topics that it would learn more about. The instructor worked with teams of teachers to help them learn these new topics, and the teams then introduced the material to the other participants. This strategy was chosen to be consistent with a constructivist philosophy, with the university instructor modeling the role of "facilitator, manager, and coach."

The major elements of the course are further described below.

1. Professional development plans with self-assessments. By using self assessments it would drive future professional development workshops.

2. Team teaching assignments. Teachers who team teach are encouraged to both be actively engaged in leading a lesson using an IWB.

3. Weekly electronic discussions. Provide a network in which users can share ideas, ask questions and discuss classroom management in terms of the IWB.

4. Additional assignments. Additional assignments included analyzing technology-based lessons in terms of the thinking skills required and their suitability for diverse learners, observing and analyzing the classroom use of technology.

This study also stressed the importance of multiple ongoing data collected throughout the course including:

1. Self-assessments. Surveys asking teacher's their feelings of competence of technology in general as well as specifically with an IWB.

2. Professional development plans. Beginning-of-course and end-of-course professional development plans provided a narrative account of teachers' views of their proficiency with computers and ways of integrating them into the curriculum.

3. Focus groups. After the course, teachers participated in one of two focus group sessions of approximately 12 teachers per group. To promote candid responses, the focus groups were conducted by a facilitator who was not affiliated with either the technology course or the professional development school. These focus group sessions were held about one month after the technology course ended.

The findings suggest that, prior to the course; the teachers' use of technology was relatively limited. However, in the process of a course-long intervention, teachers reported not only increasing their skills with computers and technology integration but also reported making changes to incorporate technology into their teaching and making plans for further changes. It presents a model for fostering the integration of technology into teaching that explicitly aims to encourage teachers to learn from one another. The technology training itself was not an isolated effort but was incorporated into an overall school improvement effort including an onsite Master's program in Curriculum and Instruction. Further, because the training was held on site, it could be directly tied to the local conditions of the school and to the teachers' particular instructional circumstances.

Another approach to professional development for technology would be to have multiple tiers. One district has three tiers of Smart Board Training: learning the basics; building lessons in order to show users how to develop and save lessons and promote interactivity; and advanced

integration. Teachers take a total of 45 hours of classes, and the courses are taught mostly by fellow teachers (O'Hanlon, 2007).

Both studies support the idea that professional development must be ongoing, long term and a significant amount of time must be dedicated to the successful implementation of the IWB.

Conclusion

As with any resource, it is perhaps the context and the purpose that remain the most influential factors with regard to developing children's learning. The technology alone does not automatically lead to opportunities for creative learning. There are clear implications for teacher educators and school leaders when introducing technology such as this to the repertoire of teacher resources. These include fusing technology with pedagogy to ensure that teachers are not merely equipped with the resources and technical capability, but also have a clear understanding of children's learning and how this may be facilitated within whole-class lessons.

Chapter 4 – Internal Research Review

Introduction

The purpose of this review is to determine how the current plan for professional development regarding implementing interactive whiteboards (IWBs) into classroom instruction is meeting the needs of teachers. Since this district is committed to adding additional boards into classrooms across the grade levels over a period of time, teacher feedback will be used to adjust the plan, if necessary, to address the needs of teachers with varying degrees of proficiency.

The Current Professional Development Plan Defined

During the 2007-2008 academic year, a pilot program was introduced with three IWBs being installed in elementary classrooms. One board was installed in each of the elementary schools. Three teachers were selected by the building administrators to be trained in the use of the boards. This group became known as Cohort 1. Mid-year, two more boards were installed and two more teachers joined the cohort. The training for this group included:

• Access to online instructional videos

• Monthly meetings facilitated by the Technology Specialist Coordinator where new techniques were introduced

• Opportunities for sharing of experiences and collaboration at the meetings

The following year, eleven more boards were installed across the district. According to the Technology Specialist Coordinator, the criteria for selecting the teachers who would receive these boards differed from the criteria with the first group. "The three most important factors that affected the placement of the boards were teacher interest, teacher facility with other forms

of technology, and student equality. Matching teachers either by grade level or subject area so that collaboration and peer coaching strategies could be incorporated into the training was also considered (Appendix A). The teachers selected to receive these boards became know as Cohort 2. Cohort 2's training consisted of:

• Hand-on opportunities and access to the instructional videos

• Three, half-day training sessions that provided basic instruction

The plan for the remainder of the year was for each cohort to meet once a month independent of each other for instruction and collaboration. The meetings would be facilitated by the Technology Specialist Coordinator with a new technique being introduced each month. These meeting would be held after school.
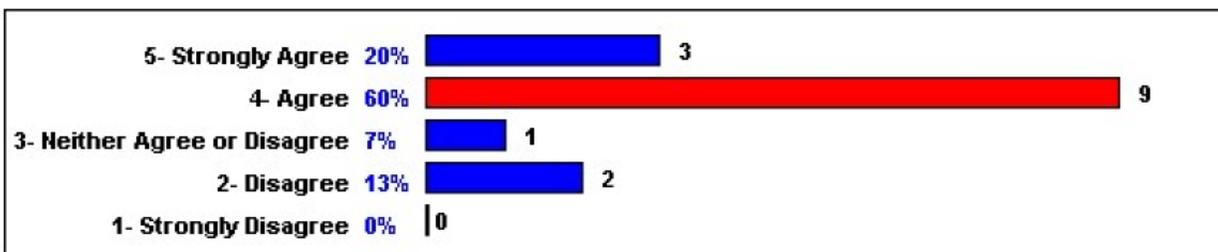
Teacher Perception of the Professional Development Plan

Generally speaking, teachers have felt the support they have been provided has been useful and has increased their confidence level in using the boards in the classroom. From the focus group discussion, however, it was determined that while the teachers understood they would be responsible for attending workshops and meetings, they were not aware that this commitment involved after school hours. This misconception has resulted in poor attendance at after school meetings. By January, the two cohorts were combined and participants were able to decide which of the two meeting dates they would attend. It was recommended that they pair up with a colleague so that they could collaborate together at whichever meeting they attended. Still, because this it was not made clear that meetings would be held after school, not all teachers with boards were required to participate.

The teacher survey realized an 83% response rate. **Table 1** below indicated that 80% of the respondents felt the current professional development plan was meeting their needs.

Table 1

The current professional development plan (monthly meetings, available tutorials, and shared flipcharts) meets my needs to effectively incorporate the board in my classroom instruction.

Response	%	Count
5- Strongly Agree	20%	3
4- Agree	60%	9
3- Neither Agree or Disagree	7%	1
2- Disagree	13%	2
1- Strongly Disagree	0%	0

(It should be noted that, earlier in the year an area for sharing information and resources was added to the district server. This was a direct result of teachers requesting a way to share resources.) 80% of the participants felt that the online tutorials helped to raise their comfort level with the boards. 86% of the participants felt the half-day workshops were beneficial (Appendix C).

Suggestions for Additional Resources

The results of the survey and focus group clearly point to two additional resources teachers feel would be of value. Most significantly is the need for support from other colleagues. As **Table 2** below shows, 100% of the survey participants felt that collaboration with colleagues increased their ability to use the board effectively. **Table 3** indicates that 35% of respondents specifically noted that collaboration with grade and subject level colleagues would be a resource

they would find useful. This need is already being addressed as the district considers placement of future boards.

Table 2

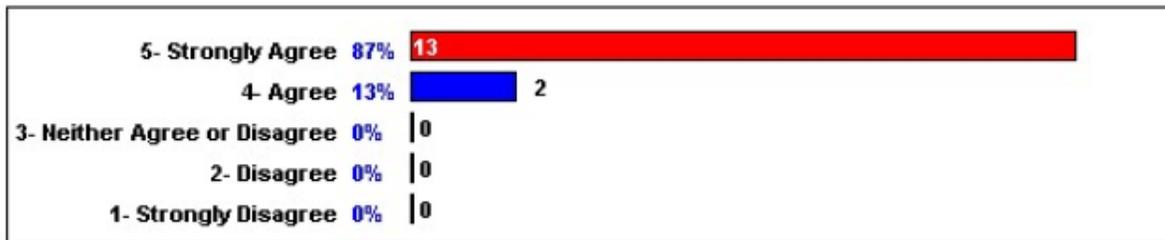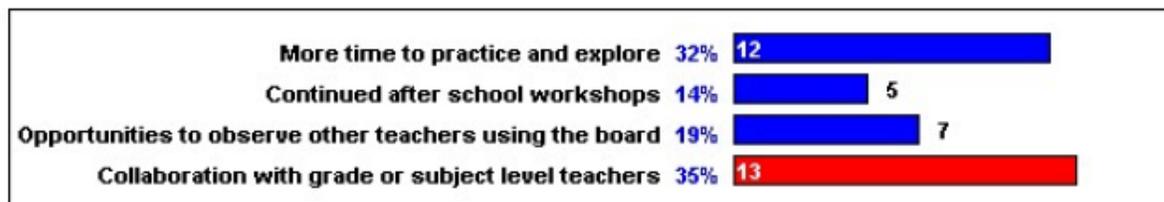Collaborating with colleagues increases my ability to use the board more effectively

5- Strongly Agree	87%	13
4- Agree	13%	2
3- Neither Agree or Disagree	0%	0
2- Disagree	0%	0
1- Strongly Disagree	0%	0

Table 3

Additional resources that would help to insure optimal use of the board in my classroom include

More time to practice and explore	32%	12
Continued after school workshops	14%	5
Opportunities to observe other teachers using the board	19%	7
Collaboration with grade or subject level teachers	35%	13

Teachers also expressed a need for increase "playtime" with the software. **Table 3** shows that 32% of the survey respondents expressed a need for more time to practice and explore. Seven of the fifteen open-ended responses specifically mentioned the need for time with hands-on experiences either in the form of half or whole day workshops, or during the after school meetings (Appendix C).

The focus group discussion brought out an interesting concern that cohort members shared. There appeared to be a need to have a contact person to answer immediate questions.
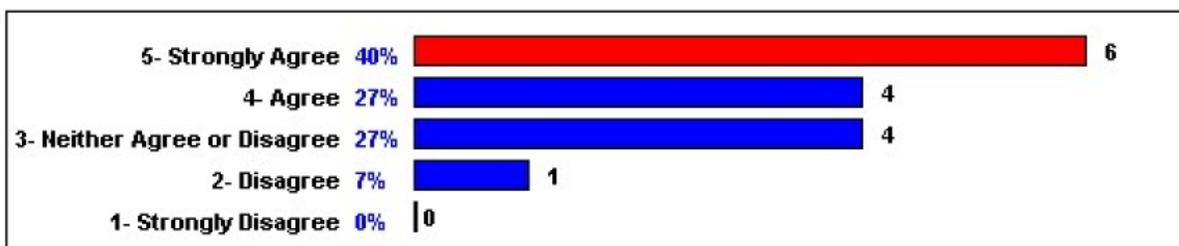
The idea of having assigned partners or groups was discussed. Also the idea of having an on-line

blog was mentioned. As a result of this discussion, there is now a "Promethean User

Conference" on the district server where cohort members can post questions or discoveries and

other cohort members can respond immediately.

Differentiating Training

The original plan for professional development with IWBs called for new and separate

cohorts to be established each year as new boards were installed. As a result of this action

research project, the plan has been adjusted from a single teacher model of direct instruction to

teachers having responsibility by collaboratively teaching and learning a group while sharing

their expertise (Appendix B). Since teachers at all level of expertise will continue to need

training, peer coaching is a viable option for future training. Teachers with experience have

expressed their willingness to share their expertise with less experienced staff members. **Table 4**

below indicates that 67% of current cohort members are willing to share their knowledge with

other colleagues at meetings and through workshops.

Table 4

I would be willing to present my knowledge and experiences with the board in a workshop fc colleagues

5- Strongly Agree	40%	6
4- Agree	27%	4
3- Neither Agree or Disagree	27%	4
2- Disagree	7%	1
1- Strongly Disagree	0%	0

During the focus group interviews, teachers suggested the idea of providing new cohort members with a mentor teacher. Also, as more boards are install in individual schools, access to experienced staff members will become more of a reality. Collaboration is clearly the key to effective professional development with the IWBs.

Chapter 5 - Conclusions and Recommendations

In a commitment to continue improving instruction, as well as integrating technology across the content areas, this district has been moving in an aggressive manner to install interactive whiteboards in the classrooms in each of the schools.

In accordance with state and federal guidelines, as well as in support of this district's mission statement, which acknowledges that "preparation and professional growth of teachers is an essential element of a quality education," a professional development plan was established to support teachers as they develop the skills necessary to use the interactive whiteboards effectively ("About Us", 2009).

The focus of this action research was to evaluate the current professional development plan, determining if it is meeting the needs of the teachers as they strive to integrate the use of the interactive whiteboard into their instruction, and to recommend adjustments to the plan, should the research support a need for change. Both the external and internal research supports the concept that teachers need to be actively involved in the professional development planning process. Teachers generally have a desire to work collaboratively in learning and sharing knowledge. Because teachers have a diverse level of technological proficiency, a collaborative model for training is being recommended to allow teachers to tap into each others' strengths and experiences. As was the case this year, flexibility to adjust the plan as needs change is also critical to the successful implementation of interactive whiteboard use in the classrooms.

Recommendations for Professional Development Already Applied

As a result of this action research, and with the constant support of the Technology Specialist Coordinator, several adjustments to the professional development process have already

been implemented. The plan is now moving from isolated cohorts with direct instruction from

the Technology Specialist Coordinator, to a collaborative model with shared responsibility

among all cohort members. The following changes, as recommended through this research, are

now in place:

• Cohort 1 and Cohort 2 have been joined and now share their experiences and expertise. As

    members become proficient in a particular skill, they provide instruction and demonstration to

    the other cohort members.

• A shared resource file has been added to the district server so that cohort members can use

    materials produced by other cohort members.

• A cohort conference has been added to the district server allowing teachers to post questions or

    new discoveries. Other cohort members can respond with answers or use the new discoveries

    immediately, rather than having to wait until the next meeting.

Recommendations for Professional Development Moving Forward

As the number of interactive whiteboard users grows, opportunities for peer coaching and

collaboration will increase. With more board users in each building, it will become easier to

team up with a partner to share experiences more regularly. This will provide opportunity for

unstructured, continual learning to occur. However, the following adjustments to the formal

professional development plan are being offered as recommendations going forward:

• Expectations of teachers selected to receive a board should be clearly stated with confirmation

    of understanding required (after school commitment, attendance at workshops, contributions

    to shared files, and a willingness to provide support to other cohort members through

    instruction and presentation)

• New board users should be provided with initial, intense instruction through the use of online tutorials and hands-on exploration, and should be required to attend three ½ day workshops. After initial instruction, the new members should be brought on board to join the larger cohort.

• Experienced cohort members should act as peer-coaches for new members so that a personal resource is available. Whenever possible, teachers should be paired by subject, by grade level, or, at the very least, by building location

• Additional, optional ½ day workshops should be made available to provide support with more advanced skills

• After school meetings should target specific skills. The skill should be defined in advance of the meeting date, should be based on the needs of the cohort members, and should be presented by a cohort member proficient in the skill. Cohort members will have the option of attending the meeting, depending on their need for instruction with the skill being addressed. Additionally, the after school meetings will provide time for hands-on exploration and collaboration.

• Feedback from cohort members should be collected periodically to insure that the plan in place is meeting teacher needs.

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Appendix A

TRIANGULATION MATRIX

RESEARCH QUESTIONS	INTERVIEW	SURVEY	FOCUS GROUP
What is the current plan for continued teacher support in the use of interactive whiteboards?	X	X	X
What are the teachers' perceptions of the current plan and/or their needs for professional development in the use of interactive whiteboards?	X	X	X
What additional resources are necessary to insure the teachers' optimal use of the interactive whiteboards?	X	X	X
How can training be differentiated to meet the specific needs of individual teacher users?	X	X	X

Appendix B

Interview with Technology Specialist Coordinator
Conducted February 6, 2009

1. Briefly describe the history of the implementation of whiteboards in the district to this point, including the professional development plan that supported the process. (How many boards, where are they located, how were the teachers trained, etc.)

Three interactive whiteboards were introduced into the district through a pilot program during the academic year 2007 -2008.

The district had already researched and decided to incorporate the boards into classroom instruction, so the purpose of the pilot was to determine where to locate the boards to maximize their use. The boards were placed in each of the three elementary schools, with one board located in the library, one in an empty class that was available for sign-out, and one in a full-time, instructional classroom. The four teachers were involved in the initial training. They met once a month for instruction and collaboration.

From this pilot it was determined that the most effective placement of the board was in a classroom with a teacher having full-time access to the technology. This scenario allowed the teacher to use the board spontaneously, to plan more lessons around its use, and to become familiar enough with its functionality so as to be a resource for other teachers who might like to try it. In addition, it was felt that having students using the board on a regular basis would increase their familiarity with the tool and, therefore, would have a greater impact on student learning.

Additionally, two more boards were added later in the year. These additional boards were financed with grant money and placed in full-time, instructional classrooms, and the teachers joined the cohort.

2. How many additional boards were added in the current, 2008-2009, year?

Nine additional boards were added this year. Some of the boards were budgeted for and some of the boards were acquired through grant monies. Three boards were added to the Early Childhood Center, each elementary school now has a total of three boards, and four boards were added to the middle school, bringing the total number of boards in the district to sixteen. The boards were distributed in the most equitable way to insure that each school and each child at each grade level would be provided opportunities for exposure to the technology.

3. How were the teachers who received these additional boards selected?

Many factors are considered when deciding where to place the boards. The primary objective is to have the greatest impact on student learning. With that in mind, the three most important factors that affect the placement of the board are teacher interest, teacher facility with other forms of technology, and student equality (how many students will be impacted). We also strive to match teachers either by grade level (different schools) or subject areas so that collaboration and peer coaching strategies can be incorporated into the training.

4. What is the current plan (2008-2009) for professional development, to support teachers with some experience as well as teachers new to the technology?

Initially, we began the on-going training as two distinctly different groups. The first cohort consisted of the teachers who were involved in the initial pilot program. The second cohort consisted of the teachers who received the boards in the beginning of the current school year.

Cohort two had opportunities for individual training and hands-on experiences, as well as instructional videos provided to them in the summer. During the first two months of school, they attended three ½ day workshops. After that, they met monthly for instruction and collaboration.

Members of cohort one provided the training during the ½ day workshops, and then met once a month for additional training and collaboration, separate from cohort 2. The rational for meeting at separate times was that the first cohort would have a greater proficiency and therefore would require different training opportunities.

In January, the two cohorts were combined, based on teacher feedback. The teachers indicated they needed more playtime and less formalized instruction. They wanted time to collaborate with grade level or subject area colleagues. Both cohorts felt they could share with each other new techniques that they may have learned independently.

Once the cohorts were combined, the teachers were able to pick which monthly meeting they would attend.

Additionally, a resource of teacher-created flipcharts was added to the district server. Teachers were encouraged to post their flipcharts, thus providing for on-going collaboration across grade levels, subject areas, and building locations.

The professional development plan began moving away from the single teacher model (direct instruction) to teachers have shared responsibility for group learning and increased levels of expertise.

5. Knowing there have been adjustments made to the original plan, do you think the changes have had any impact either positive, or negative?

The change has had some positive impact in that teachers have been given more say in how the training session time is spent. Teachers can plan to meet with others who either have expertise in a certain skill they are looking to improve, or a subject matter they might both be teaching. They can use the time to plan, play, and create instructional flipcharts.

A downside to the new format is that there is not enough structure. It is so flexible, that teachers are not always attending sessions, and because the technology is so new, teachers are not always aware of what it is they don't know. There needs to be some accountability on the parts of the teachers for attending sessions, producing flipcharts, and sharing expertise.

6. Has there been feedback from teachers as to how they feel about the training they are receiving?

Other than the request to combine the cohorts and provide addition time for hands-on opportunities, there has really been no additional feedback from teachers regarding the training sessions.

7. What is the plan for adding more boards to the district for 2009-2010?

We have budgeted for an additional 13 more boards. Whether or not that will happen will depend on the budget being approved. With that said, we will again attempt to distribute the boards evenly among schools and grades while considering teacher interest, facility with technology, and the number of students impacted. Now that more teachers are involved, we will also consider more seriously placing the boards so that new teachers can be paired with an experienced teacher, either by, grade level, or subject area, or physical location. This will provide more opportunity for collaboration.

8. Is there a plan to differentiate professional development to support users at various levels of expertise?

Initially, the new cohort will be trained separately, providing concentrated instruction to get them up and running. This would include the summer training sessions and the intense ½ workshops early in the year. There is then the potential to have the new cohort join the others and incorporate peer coaching and collaborative planning into the training. Additionally, the professional development plan should specifically state the objects for each participant which should include required publishing of flipcharts and demonstration of expertise to colleagues as a form of training.
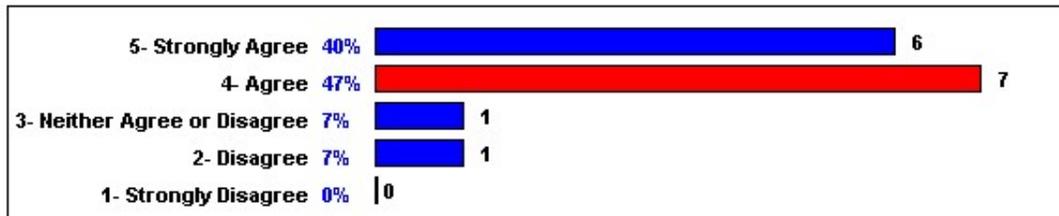
Appendix C

Promethean / ActivStudio Training Survey

Interactive Viewer

Question #1

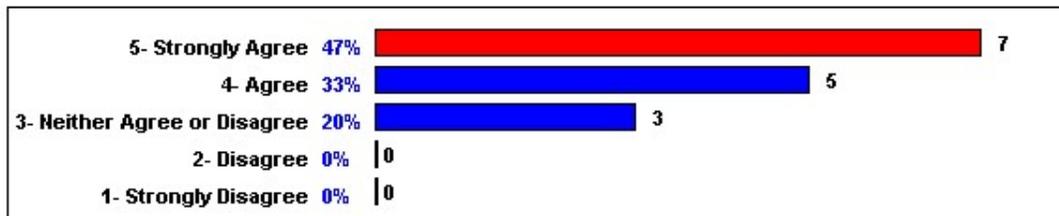The resources on Promethean Planet help to raise my comfort level with the Board

5- Strongly Agree	40%	6
4- Agree	47%	7
3- Neither Agree or Disagree	7%	1
2- Disagree	7%	1
1- Strongly Disagree	0%	0

District Wide Users Responding = 15   3/5/2009

Question #2

The tutorials posted on FirstClass help to raise my comfort leve with the Board
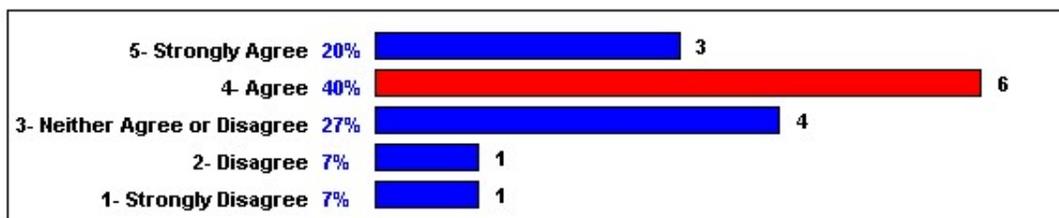
5- Strongly Agree	47%	7
4- Agree	33%	5
3- Neither Agree or Disagree	20%	3
2- Disagree	0%	0
1- Strongly Disagree	0%	0

District Wide Users Responding = 15   3/5/2009

Question #3

The shared flipcharts available on First Class are useful in my own classroom.

5- Strongly Agree	20%	3
4- Agree	40%	6
3- Neither Agree or Disagree	27%	4
2- Disagree	7%	1
1- Strongly Disagree	7%	1

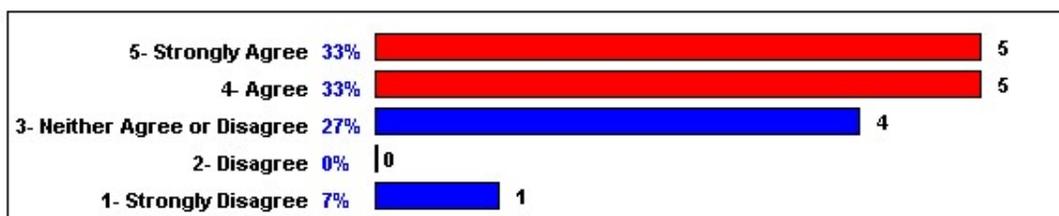# District Wide Users Responding = 15   3/5/2009

Question #4

I am comfortable with adding flipcharts that I created to the First Class shared folder.

5- Strongly Agree	33%	5
4- Agree	33%	5
3- Neither Agree or Disagree	27%	4
2- Disagree	0%	0
1- Strongly Disagree	7%	1

District Wide Users Responding = 15   3/5/2009

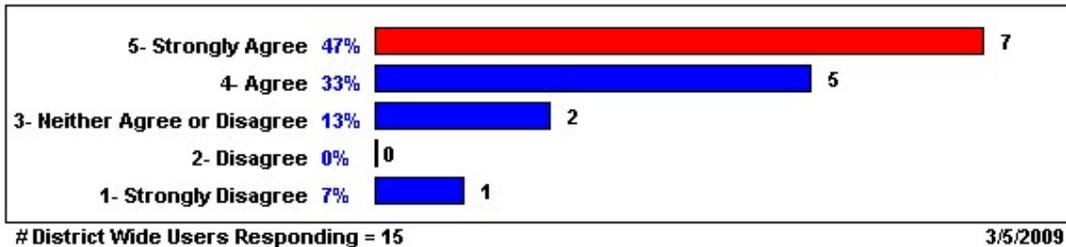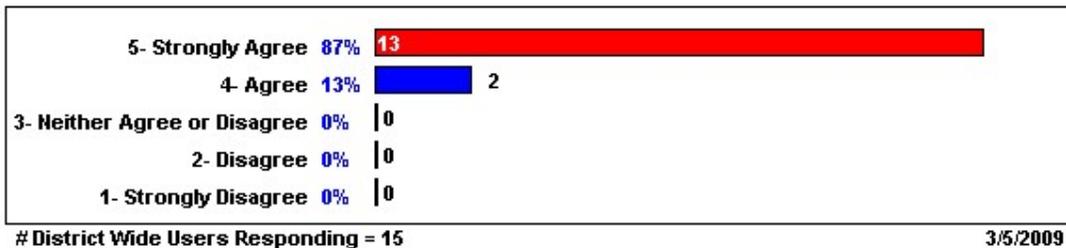|		
5- Strongly Agree	53%	8
4- Agree	33%	5
3- Neither Agree or Disagree	13%	2
2- Disagree	0%	0
1- Strongly Disagree	0%	0

District Wide Users Responding = 15   3/5/2009
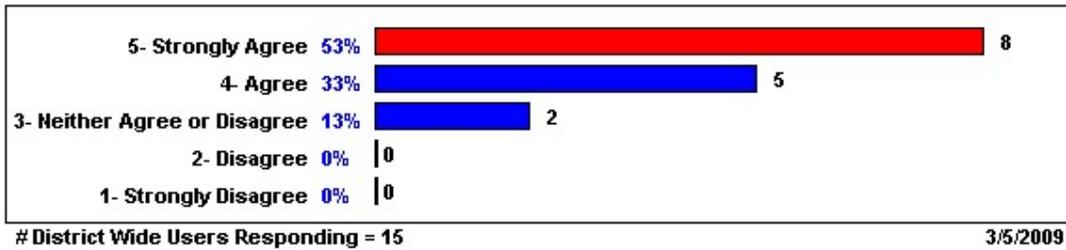
Question #6
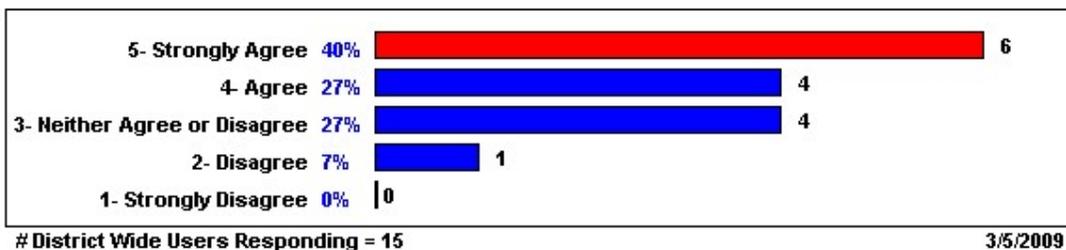
I find the after school workshops provide me with additional strategies for using the board that I can apply in my classroom instruction.

5- Strongly Agree	47%	7
4- Agree	33%	5
3- Neither Agree or Disagree	13%	2
2- Disagree	0%	0
1- Strongly Disagree	7%	1

District Wide Users Responding = 15   3/5/2009

Question #7

Collaborating with colleagues increases my ability to use the board more effectively

5- Strongly Agree	87%	13
4- Agree	13%	2
3- Neither Agree or Disagree	0%	0
2- Disagree	0%	0
1- Strongly Disagree	0%	0

District Wide Users Responding = 15   3/5/2009

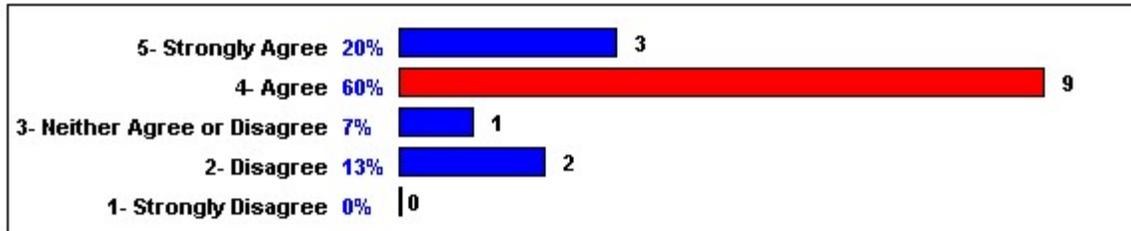## Question #8

I would be willing to present my knowledge and experiences with the board in a workshop for colleagues

5- Strongly Agree	40%	6
4- Agree	27%	4
3- Neither Agree or Disagree	27%	4
2- Disagree	7%	1
1- Strongly Disagree	0%	0

District Wide Users Responding = 15   3/5/2009

Question #9

The current professional development plan (monthly meetings, available tutorials, and shared flipcharts) meets my needs to effectively incorporate the board in my classroom instruction.

5- Strongly Agree	20%	3
4- Agree	60%	9
3- Neither Agree or Disagree	7%	1
2- Disagree	13%	2
1- Strongly Disagree	0%	0

District Wide Users Responding = 15   3/5/2009

Question #10

Additional resources that would help to insure optimal use of the board in my classroom include

More time to practice and explore	32%	12
Continued after school workshops	14%	5
Opportunities to observe other teachers using the board	19%	7
Collaboration with grade or subject level teachers	35%	13

District Wide Users Responding = 15   3/5/2009

Question #11

What suggestions can you offer to insure that your specific needs are met in terms of professional development with the boards?

 #   Responses are Anonymous

1. more structure in collaboration. Share the responsiblity for learning and teaching different functions of the board.
2. I have no additional suggestions. All of my suggestions were listed above.
3. It would be helpful to continue to offer half day workshops for knowledge building and collaboration. I feel that it is difficult to meet after school due to prior obligations and very busy schedules.
4. Although the after workshops are effective, I would like to see at least one whole day workshop with all Promethean users to brainstorm, share ideas and ask questions.
5. Time to work with colleagues has been very helpful
6. I think the boards work best when they are located in your own classroom rather than going to a different location. If in your own classroom they will be used more effectively and often. If I had more time to work with colleagues on specific activeboard lessons it would be extremely beneficial to me.
7. Continue to offer after school workshops or half day workshops. Allow time to prepare flipcharts during workshops so if teachers have questions they will have resources around them to help out immediately.
8. When I had my board, I really benefitted from having time to share lessons on flipcharts with grade level colleagues. Maybe there can be time set aside for collaboration amongst grade level colleagues with Promethean boards.
9. The best way to meet individuals needs for professional development with the boards would be searching for lessons on promethean planet while planning specific lessons.

10. *Jotting down problems as you encounter them. Possibly pairing up one on one with a partner to learn the basics.*

11. *I have no additional suggestions for this school year, but next year I would like to be able to master some more advanced features so that I can improve my flipcharts from this year!*

12. *Another session with a Promethean representative to learn about any new programs currently being implemented*

13. *I think the half day workshops were great but the after school meetings are not. I don't need time to work on my flipcharts, I'm able to meet with my colleagues during the school day to do that. I need to learn more about the board and its features. I definitely do not know all there is to offer and its a shame because I really think I could use it more effectively in my classroom if I received more help/support.*

14. *The opportunities have been excellent, I have simply struggled with the fact that there is no one to colaborate with on my subject and grade level. It is helpful to work with the other teachers in my building as far as application of the activestudio resources.*

15. *more time to play with the board and feel comfortable with its ability and shortcuts.*

Appendix D

Focus Group
Date: 2/19/2009
Participants: 10

QUESTION 1:

When you were selected to receive a whiteboard in your classroom, what were your understandings as to how you would be trained in their use?

RESPONSES:

- I would be attending multiple workshops.

- I was to collaborate with other people in my building.

- I knew there would be meetings at the beginning, but I did not know when they were or the occurrence of the meetings.

- I did not know that I would have to attend meeting throughout the year.

- I thought it would be part of my PIP.

QUESTION 2:

What is your understanding of the plan for continued support in using the board?

RESPONSES:

- I will get continued support of advanced features.

- There will be more informal meetings.

- The meetings will be less frequent.

- The workshops should be on specific topics.

- I will be presented with choices of workshops to attend. If six are offered, I take the ones I want.

- The meetings will be every other month.

- The meetings will be in a round table format.

- I would like a blog or a conference to post questions and get answers quickly.

QUESTION 3:
Can you describe what you consider to be your greatest needs for professional development in regard to using the board in instruction?

RESPSONSES:

- I want more time to learn, but I don't want to be out of my classroom.

- I would like meetings that target a specific skill.

- When using the board in the classroom, I struggle with students waiting their turn to use the board.

QUESTION 4:

What additional resources do you feel need to optimize the board's potential in your classroom instructions?

REPSONSES:

- I need more Activpens.

- More manuals are needed.

- Cohort members should create *How-to* documents.

- We should be able to take online course.

- Promethean representatives should come to the district to teach lessons.

- We need more practice with the advanced features in Activstudio.

QUESTION 5:

What suggestions do you have for differentiating professional development to meet the specific needs of individual teachers using the board?

RESPSONES:

- Individuals should be assigned a mentor.

- People should work in groups of two or three.

- Staff members with Promethean Boards should present workshops in their own buildings.