Interactive Whiteboards: Implications for K-2 Literacy Instruction
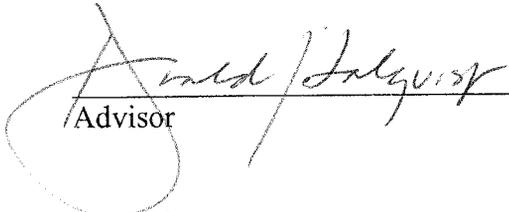
by

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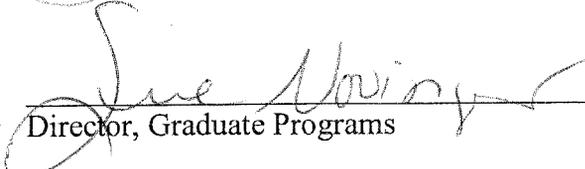Interactive Whiteboards: Implications for K-2 Literacy Instruction

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CHAPTER 1: Introduction

Problem Statement

Our society is becoming increasingly more technologically advanced, and now more than ever, our school systems face the challenge of keeping up with these advancements in order to provide relevant learning environments for students who are becoming more and more technologically literate through use of computer technologies, communication devices and virtual gaming systems. In schools, attention is often placed on traditional forms of instruction such as reading from books and writing on chalk or dry erase boards. Unfortunately, these teaching techniques often conflict with the modes of learning students are becoming fluent with outside of school.

Some schools have begun to utilize technological tools such as the interactive whiteboard, to modernize teaching practices. An interactive whiteboard, also called a SMARTboard, is a large interactive display board that is connected to a computer and a projector. A projector displays the computer's desktop onto the board's surface, where users control the computer using their finger, a specialized pen, or other devices, thus the interactive element. Typically, the board is either attached to a wall or mounted on a floor stand. Teachers use the interactive whiteboard to teach a variety of lessons across a range of curricular areas. In some classrooms, the interactive whiteboard is replacing chalkboards and dry-erase boards and as a result, challenging traditional teaching practices.

Significance of Problem

Many countries have already invested in updating schools with interactive whiteboards. In the United Kingdom, for example, 60 percent of classrooms are wired with interactive whiteboards (Davis, 2007). In the United States, just 12 percent of classrooms are equipped with whiteboards; most of these sites are secondary classrooms where usage is targeted toward adolescent students (Davis, 2007).

One area to explore, then, is the impact interactive whiteboards can have on students in early childhood classrooms, specifically, kindergarten through second grade (K-2), and what implications interactive whiteboards have on instruction, specifically, literacy instruction. In the early grades, students are primarily learning how to read and write. In the upper grades, reading is vital to be successful in other content areas. Thus, research into the effectiveness of interactive whiteboards in primary literacy instruction is essential.

Purpose

As a first grade teacher and future literacy specialist, I was curious to learn more about how students respond to this form of technology and the potential it holds for teaching and learning. The purpose of my study, then, was to describe the implications whiteboards have on literacy instruction in K-2 literacy environments through examining the following questions.

- o How do interactive whiteboards support the literacy development of K-2 students?

o What strategies do teachers use with interactive whiteboards during literacy lessons?

o What are the perceptions of teachers' and students' regarding interactive whiteboards during literacy lessons in K-2 classrooms?

Rationale

Davis (2007) states that "one of every seven classrooms in the world will feature an interactive whiteboard by 2011 according to market research" (p. 24). The school district in which I teach and conducted research has introduced a number of technology initiatives. The district is committed to improving and updating instruction by making new tools and resources available. A district press release stated that:

> During the past 3 months, we have had multiple discussions regarding the state of instructional technology within (this) district. It has become clear that there is significant interest on the part of many to fully integrate technology as an essential element of daily instruction. In a very real sense we are entering a new phase of education where the use of technology is becoming the chalk and blackboard of the 21st century. (District Initiative, 2008)

During the last school year, the school district's interim superintendent announced a new vision for updating instructional technology within the district. A call for proposal was announced that enabled 100 teachers from across the district to

an interactive whiteboard installed in their classroom. The district plans to introduce interactive whiteboards in future years as well, how many will depend on cost effectiveness, which can only be determined through research opportunities such as this study.

The participants in this study were students and teachers from the elementary school in which I teach. I invited twenty-three first graders, along with their teacher, to participate. The first grade teacher has an interactive whiteboard installed in her classroom and she is a member of the action research group which has met to gather resources and discuss interactive whiteboard usage. Prior to the start of the 2008-2009 school year, the student and teacher participants had no previous experience with an interactive whiteboard.

The teacher participants who were invited to participate were among a group of early childhood teachers completing action-research related to the use of interactive whiteboards. The first grade teacher participant, a kindergarten, a second grade teacher, and a literacy specialist were a part of the focus group.

Study Design

I collected data through observations of students in a first grade classroom during literacy lessons using the interactive whiteboard. I completed four 25-minute observations during literacy instruction over a period of six weeks. Data collection during the observations centered on the students' verbal and nonverbal behaviors. I

also be observed how the classroom teacher used the interactive whiteboard in her literacy instruction.

To record my observations, I used an observation sheet that I created specifically for this study. The observation sheet enabled me to document the strategies the teacher used with the whiteboard as well as student interactions with the technology.

After the six observations, I conducted a semi-structured focus group interview with small groups of first graders who had, along with their parents or guardians, provided informed consent. A goal of the student focus group was to gain student perspectives on the interactive whiteboard.

Summary

Teachers often struggle to find ways to engage students and provide interactive instruction. As technology changes, I believe, teachers and school districts must be open to embracing changes and experimenting with new tools for teaching and learning. It is through continuous exploration, reflecting on best practices, and discovering new and improved strategies that education is revolutionized. Studies such as this one are critical to the development of new tools and practices and will be essential as interactive whiteboards continue to be integrated into educational settings.

CHAPTER TWO: Literature Review

Imagine that you have been hired as a new teacher. Upon arriving your first day at the new school, you are given a small handheld device and directions on where to find your new room. Expecting to be bombarded with the typical new teacher binder, a curriculum resource binder, an assessment masters binder, a health codes binder, and a school improvement plan binder, you pull your empty teacher crate on wheels to the classroom.

After opening the door you decide to get started on your first day plans, however, there are no pencils or paper to be found;at first glance, there does not appear to be any desktop computers as well. You find your way to the front of the room to write your classroom procedures on the board, but find no such thing. The board at the front appears to be a screen of some sort with no writing utensils. You then decide to arrange your classroom and venture over to the student tables. You realize that the tables contain no trays or chair pockets for books and folders. In fact, instead of places to put pencils and crayons, in the center you see some sort of electronic port. You search the room for an attendance folder or a lunch menu but to no avail. You consider calling the office but you are unable to find a phone.

Feeling hopeless, you sit in the desolate classroom and open the only box of supplies in the entire room. Inside you find a class set of the same small handheld device you received as you walked into the school. You turn on one of the devices and immediately a face of a student pops up and her name is vocalized to you. You

also see a profile of her complete with grades, contact information, individualized education plans, and health concerns. You touch the screen and her face is replaced by several icons. Looking more closely, you realize that each icon is related to a specific subject area or a feature of this technology. With one touch you are able to access textbooks updated by the minute, profiles of classrooms all across the globe, sound and video capabilities to capture live footage, connectivity to allow streaming throughout the classroom, the ability to send data directly to the teacher's device, not to mention the ability to view and order lunch and mark yourself present for the day. Seem impossible?

On April 21, 2009, Apple announced that sales of the Apple iPod Touch and iPhone had reached 37 million (Delahunty, 2009), half of which were sold to people under the age of thirty (Rubicon, 2008). The iPod Touch and the iPhone are handheld devices that allow instant Internet connectivity and many of the same features of a computer, even the ability to read and save books on a device no larger than a hand (www.apple.com). Ninety-six percent of American children ages 9 to 17 who have used the Internet for social networking technologies (Ward, 2008). Would school look a little more like what was described in the opening pages of this chapter if young technology users had a say?

Believe it or not current technologies and a majority of students have the capabilities of achieving everything described previously. Many students have access to the iPod touch and the iPhone, and to millions of other students across the globe via social networking sites such as MySpace, Facebook and Twitter. Even primary

age students are connected to the Internet and are interacting with others on sites such as Webkinz World and Club Penguin. Students create their own videos and share them with others viaYouTube. They play complex games globally through game consoles. Students look up what they need or want to know using websites such as Google or Wikipedia and other sites on the Web, which allow them to have access to the most up-to-date information available. Students use iPods or cell phones to text-message, e-mail, even word-process documents.

Instead of embracing these changes, our current educational system, for the most part, views these technological advances negatively (Ward, 2008). Students are required to "power-down" before entering school as "80 percent of districts (in the United States) prohibit students from online chatting and instant messaging at school, and more than 60 percent prohibit blogging" (Ward, 2008, p. 53). When school starts, cell phones, music players, gaming systems, and open access to the Internet ends and as teachers hand students basal readers, out-dated textbooks, and cursive workbooks (Prensky, 2008). And interestingly enough, teachers wonder why their students appear unengaged.

It is no wonder, then, that students prefer to "learn in a visual world and like to have information at their fingertips" (Villano, 2006, p. 16). Students of the 21st century are quick learners and pick up on the latest technologies. As some teachers were learning how to use e-mail and a laptop, their students were learning "blogs, chat rooms, wikis, forums, and other Web tools....beyond anything that ever existed" (Ward, 2008, p. 53).

It is a good thing because students in today's schools will grow up and incorporate some kind of new and improved technological tool in their careers. In fact, Michael Cox, chief economist at the Federal Reserve Bank of Dallas told a group of students that "they would have at least five jobs after (they) graduate, four of which have not been invented yet" (Mokhoff, 2000, p. 2). He compared the 21st century to the period of American history spanning from 1895-1915 when our nation was experiencing rapid growth of new technologies including automobiles, radios, telephones and other machines. These inventions dramatically changed occupations and lifestyles in upredicatable ways. Similarly, we live in an information age where the Internet and microprocesses are evolving daily, and according to Cox, "make existing industries more efficient and spawning entirely new ones, including Web page design and Internet-based services" (Mokhoff, 2000, p. 2). Perhaps, then, the most valuable principle teachers can instill in students is how to adapt to changes, seek knowledge for themselves, and evaluate the plethora of information available to them.

Current Trends in Educational Technology

According to a survey entitled, *State of Digital Content in America's Classrooms*, by Quality Education Data (QED) Inc., a subsidiary of Scholastic (2008), teachers rarely integrate technology into their teaching practices, but would like the opportunity to use more. In the study, a random sample of 1,898 K-12

teachers across the United States were selected to complete a survey; of the sample, 1,031 teachers participated.

Of the study participants , 9 percent utilize technology (interactive whiteboards, projectors, computers, etc.) for 50 percent or more of their instructional time (Scholastic, 2008). Perhaps this is because 85 percent of the participants stated the number one barrier to incorporating technology was a lack of resources (Scholastic, 2008). According to Andy Lacy, President of QED,

> The findings from the new State of Digital Content report underscore the importance of schools across America making a commitment to providing access to up-to-date, relevant technology for both students and teachers. Teachers are telling us that they recognize the importance of technology as both a motivator and an instructional tool and as an essential part of a 21st century classroom.
>
> (Scholastic, 2008, p. 1)

An ordinary classroom transformed into a multimedia classroom would be similar to going from driving a hand-cranked car to a Porsche (Villano, 2006). Examples of recent technologies that some classrooms have access to include:

> *Podcasts:* A podcast is a series of digital media files, usually digital audio or video that is made available for download via web syndication (Wikipedia, 2009).
>
> *Web 2.0:* "The trend of using the Internet for social networking, with more and more software tools available online, free and open source,

where they can be modified, copied, and distributed free of charge"

(Ward, 2008, p. 53).

TriCaster: "A simplified live switching and audio mixing device with

real-time output to video, and a software tool that offers web-

streaming, real-time keying, titling, editing, two-dimensional video

painting, three-dimensional modeling, and animation"

(Villano, 2006, p. 17).

Interactive Whiteboard

However, very few technological tools can offer the same versatility and

impact in terms of classroom instruction as the interactive whiteboard, which was

first introduced in the 1990s (McLaughlin, 2008). According to McLaughlin (2008),

the director of the National Institute for Community Innovations, an interactive

whiteboard (IWB) is:

A touch sensitive whiteboard linked to a computer and a digital

projector, enabling one to control the computer by touching the board

by hand or with a special pen. It is often used in conjunction with

other tools such as personal response systems that enable educators to

rapidly assess their students comprehension of the topic at hand, and

internet connectivity that allows educators to blend web-based

materials with other digital resources, and wireless slate and tablet

computers that permit control of the IWB by a teacher or student from any location in the classroom (p. 2).

What is unique about an IWB is its ability to incorporate multiple modes of technology in to one single device. The methods of multimedia and digital technologies discussed previously, podcasts, Web 2.0, and TriCaster, can be accessed and displayed on an interactive whiteboard. The results of a survey by the National School Boards Association at the 2008 Technology and Learning Conference, indicated that "school administrators named the interactive whiteboard the most useful tool to support instruction and engage students by a significant margin over other products, such as laptops, document cameras and audience-response systems" (Dyrli, 2008, p. 66).

Thus, Scholastic has begun advertising for technology-related tools on their website and through mass E-mail marketing (Scholastic, 2009). A recent email sent to teacher and administrator Scholastic members boasted the title "Maximize your stimulus funding with SMART. Here's how" (Scholastic, 2009, p. 1). The advertisement promotes SMARTboards (a brand of interactive whiteboards) by stating that "the technology investment you make today delivers lasting results by helping teachers give each child an early start to a high-quality education" (Scholastic, 2009, p. 1). The market researcher describes SMART Technologies as the leading distributer of interactive whiteboards stating that, "nearly 6 of every 10 interactive whiteboards installed in U.S. classrooms in 2008 were from SMART and

over 25 million teachers and students in 900,000 classrooms worldwide have access to SMART products" (Scholastic, 2009, p. 1).

Educational Impact of Interactive Whiteboards

Research on interactive whiteboards and their effectiveness in schools has been studied by scholars in countries outside of the United States and by leading distributers of these products (McLaughlin, 2008). By studying the impact, countries such as the United Kingdom have revolutionalized teaching and learning practices, and companies such as Smart Technologies have created a global market for interactive whiteboards.

Interactive whiteboards are commonly found in classrooms throughout the United Kingdom. In 2004, the Secretary of State for Education in England, Charles Clarke, announced that 50 million dollars would be spent for the purchase of IWBs and predicted that every school of the future will one day be equipped with an interactive whiteboard (Miller, 2005). As part of a research project to review educational impact of these expenditures, Smith, Higgins, Wall, and Miller (2005) synthesized the research literature and investigated the impact of interactive whiteboards in UK classrooms with children ages 9-11 in the curricular areas of literacy and math from 2003-2004. Through observations of and interviews with students and teachers, a variety of benefits of incorporating IWBs into educational settings emerged. The following sections review the findings of this study.

Encouraging Social Learning

The interactive whiteboard has the potential for more interaction and social learning in the classroom (Smith, et. al., 2005). The idea of students learning through social interactions is prominent in many schools in the United Kingdom and is based on the research of Vygotsky (1978) and his theory of social-learning. The teacher, in this type of classroom, takes on the role of a facilitator, guiding student learning. In a social constructivist classroom with an IWB, "the teacher is viewed as mediator between the computer and software, and the pupil's learning experience" (Smith, et al., 2005, p. 95). An advantage of the IWB, is that the teacher has the ability to face her class and be in closer proximity to students (Smith et al., 2005). The software used with the IWB enables students to manipulate imbedded texts and graphics while the teacher guides them through the use of prompts and questions. The IWB, when used appropriately, facilitates interactions between students and teacher. According to Smith et al. (2005), teachers should use an "IWB to encourage an interactive environment wherein pupils actively participate in social (re)construction of knowledge and understanding is presented as a means to transform educational practices" (p. 96).

Reaching Diverse Learners

IWBs can be useful for students with diverse needs and who require multiple levels of instruction. For deaf students, the teacher can be in the same line of sight as the board and have the ability to face the student when speaking (Smith, et al., 2005).

Smith and his colleagues found that IWBs were also more useful for students who had difficulties with their fine motor skills and who normally struggled to use computers or write by hand. Often students opted to work on the IWB because they were able to complete the same activities more efficiently by using their large motor-skills. Teachers could then scaffold instruction to allow these students to work on their fine-motor skills in an engaging way (Smith, et al., 2005). Teachers could also scaffold individual activities within a lesson by using the split-screen feature on the IWB. This feature allowed the teacher to imbed multiple pages into a program where students could then choose an appropriate level of difficulty to proceed to next, or the teacher could spontaneously change between multiple levels of difficulty with the touch of a screen.

Engaging Students

For students, the IWB is very similar to the iPod touch (a highly engaging device for many young people), only a much larger version. Smith et al. (2005) recognized that "the most widely claimed advantage of IWB's is that they motivate pupils because lessons are more enjoyable and interesting, resulting in improved attention and behavior" (p. 96). The multi-sensory approach to learning is engaging for students and helps teachers deliver instruction in a way that students can relate to and remember (Smith et al., 2005). Teachers can display key concepts in a variety of ways on the interactive whiteboard that incorporate student participation, visual

images, and auditory stimulation, the combination of which can stimulate and enhance student's memory and ability to recall information (Smith et al., 2005).

Enhancing Computer Skills

When the IWB is in use, the desktop screen of a laptop is projected on to the large display enabling students to see a larger representation of a typically small computer monitor. The ability to sync interactive whiteboards with a traditional laptop, allows interactive whiteboards to be more user-friendly. Through the use of the IWB, the teacher models how to access software, documents, and programs for the students. Students, in turn, gain knowledge in how to access information via the computer. In addition, computer operation for students is often easier on the IWB, again providing an appropriate scaffold to computer technology instruction (Smith et al., 2005).

Implications for Teachers

Once teachers have been successful in using an IWB for atleast a year, there is a potential that they may reduce their the amount of time they spend planning. According to Smith et al. (2005), teachers can instantly save programs and teacher created materials on the IWB. Even student activities such as shared reading and writing activities completed on the IWB can be saved by users and accessed at a later point in time. Although it may take time initially for teachers to become familiar with

the technology, once this is accomplished, teachers can use the "IWB technology to save, share and re-use lesson materials" (p. 94).

Cautionary Reminders

If used primarily as a presentation module, the "interactive" can be taken out of the "interactive whiteboard," and thus reduce its effectiveness (Solvie, 2007). According to Solvie (2007), this tool has the potential of being used effectively in some classrooms and ineffectively in others depending on the skills of the teacher using the tool. O'Hanlon (2007) explained the danger of using the IWB ineffectively when he states,

> Interactive whiteboards are a "crutch" technology that, for all their functionality, only promote the traditional stand-and-deliver method of teaching, with the teacher dictating from the head of the classroom to aisles of seated students, in opposition to the movement toward student-centered learning" (p. 34).

Villano (2006) argues that technology has in fact not had a positive influence on today's generation. Students receive virtual simulation outside of school and need authentic social and hands-on experiences, in which teachers must provide in schools. The American Academy of Pediatrics stated that,

> Kids in the United States watch an average of four hours of television a day. What's more, a recent report from the National Academy of

Sciences shows that 26 percent of US teenagers spend between one

and two hours online a day. (Villano, 2006, p. 16)

Adding more multi-media technologies in schools may in influence students in the

long-run in ways that have not yet been studied (Villano, 2006). Villano (2006) does

not name IWB's specifically, but rather, cautions schools to research new

technologies thoroughly before making significant technological changes.

Interactive Whiteboards in the United States

Although many new technology initiatives are underway, school districts in

the United States still fall behind other countries in terms of interactive classrooms.

Davis (2007), for example, stated that school districts within the United States often

decide against large-scale technology purchases (such as the IWB) because "they're

still weighing how interactive whiteboards will work best with their curricula" (p.

25). Emphasis is placed on standards and curriculum development, which often

cannot keep up with current technologies and new information. Money that could be

used on IWBs is often spent on textbooks that rapidly become outdated (Warlick,

2004).

Funding

Another reason for the discrepancy between technology in American schools

and other countries is the distribution of school funds (Davis, 2007). In the United

States, school spending is state funded and community tax based. In other countries,

a school district's cash flow comes from a centralized government, which has more control over educational initiatives. According to David A. Martin (2007), the executive chairman of SMART Technologies, the innovating leader of interactive whiteboards, "the countries...[that are more marketable] are the ones with a more centrally financed form of education" (p. 25).

Hill (2007) described the complications that arise with multiple means of funding supporting American schools. School finances are segregated in multiple accounts and schools receive funding from local, state, and in some cases, government expenditures. Therefore, a gray area is created when it comes to tracking the funds provided to schools. With a heavy emphasis placed on high standards in America, no one seems clear on how school funding can and should be used most effectively (Hill, 2007).

Professional Development

Even school districts that budget for technology purchases do not always incorporate teacher professional development. Thus, districts may choose to invest in IWBs, but there may be a gap in how effectively the boards are being used due to a lack of professional development for teachers (O'Hanlan, 2007). Professional development is essential; effective teaching with interactive whiteboards is dependent upon teacher dexterity with the tool (O'Hanlan, 2007).

Morrow, Barnhart, and Rooyakkers (2002) conducted a study that was funded through the U.S. Department of Education to determine the effect of incorporating

technology in education classes at The Graduate School of Education at Rutgers University. Morrow, Barnhart, and Rooyakkers studied the graduate students acquistion of technology skills as well as how these skills impacted the graduate students' own classrooms. Through this study, Morrow, Barnhart, and Rooyakkers (2002) stressed the importance of starting from the bottom-up by professionally developing future teachers enrolled in early literacy courses in order to facilitate technological changes in schools. The project was successful in developing graduate students understanding of technology and it also influenced these teachers to utilized technology more frequently in their own work. Morrow, Barnhart, and Rooyakkers (2002) suggest that colleges be equipped with IWBs and other technologies so that future teachers are trained prior to entering a classroom (Morrow, Barnhart& Rooyakkers, 2002). In addition, schools that have already invested money in purchasing IWBs must also provide professional development opportunities for teachers (Morrow, Barnhart & Rooyakkers, 2002).

SMART Technologies

Despite lack of funding and teacher professional development in the United States, leading interactive whiteboard distributers, such as SMART Technologies, are beginning to target United States' schools (Davis, 2007). Instead of waiting for research from overseas countries to dictate American teaching trends, SMART Technologies has initiated their own research foundations (http://www.education.smarttech.com/ste/en-us/). The corporation distributes a

variety of resources including a newsletter entitled EDCompass, case studies available on their website (www.smarttech.com), SMARTer for Kids Research Foundation, Interactive Educator Magazine, and numerous educational articles published by SMART's CEO, Nancy Knowlton. EDCompass Newsletter and Interactive Educator Magazine keep teachers informed of new technologies and available resources. SMART Technologies case studies provide research from targeted schools around the world. Since 1997, the SMARTer Kids Foundation has provided teachers with funding for six- to eight-month studies of incorporating interactive whiteboards into their classrooms (SMART Technologies, 2009).

Interactive Whiteboards and New Literacies

As school systems in the United States begin to incorporate IWB's into classrooms, new considerations must be made regarding how literacy is taught, perceived and expanded through the use of technology (Hassett, 2006). Expected teaching practices, modes of standardized assessments and even school laws change periodically, however, as our society advances, our concepts and definitions of literacy instruction should also evolve (Hassett, 2006). The National Research Council, in a review of reading difficulties in early childhood, stated :

> Reading is essential to success in our society. The ability to read is
> highly valued and important for social and economic advancement.
> ...Current difficulties in reading largely originate from rising demands
> for literacy, not from declining absolute levels of literacy. In a

technological society, the demands for higher literacy are ever increasing, creating more grievous consequences for those who fall short (as cited in Hassett, 2006, p. 140).

In a 2006 study, Hassett challenged the permanence of the "by the books" teaching practices in modern United States schools, explored literacy instruction from a cultural and historical background, and sought to outline literacy beliefs that are accepted as truth because of tradition. For example, the notion that traditional print carries the most amount of meaning in a text (Hassett, 2006).

The purpose of Hassett's analysis was to determine if common literacy beliefs need to be altered in order to meet the demands of a changing society. Because new technologies are ever-evolving, Hassett proposed the idea that the United States educational system may need to re-define the meaning of "literacy" and how it is being taught. Hassett proposed incorporating new ways of thinking or new "technologies" into teaching. For example, Reading First initiatives, which are funded by The No Child Left Behind Act (United States Department of Education, 2008) stated that the five essential scientifically-researched components of literacy development are phonemic awareness, phonics, fluency, vocabulary, and text comprehension (Armbruster & Osborn, 2001) However, Hassett (2006) believed that this definition represents a narrow view of literacy and that it should be expanded to prepare students for new demands in becoming literate (Hassett, 2006). "New forms of texts combine visual, verbal, and written elements in ways that rival the printed

word" (Hassett, 2006, p. 135). Teaching print literacy using letters and words is no longer enough to support new forms of texts (Hassett, 2006).

The literacy skills needed to develop as a reader are more complex in today's society (Hassett, 2006). Literacy development encompasses a variety of skills and practices that are transferred on a daily basis to many modes and contexts (Compton-Lilly, 2007). Students in classrooms in the 21st century must be adapt able to incorporating new literacies such as, "informational literacy," and "web literacy," or the transfer of written and spoken word to a variety of multimedia modes (Hassett, 2006). For example, students must be able to read written texts as well as computer generated documents, websites, and navigate through the processes involved in accessing information. Thus, teachers must be able to navigate through "information environments that are richer and more complex than traditional print media, presenting richer and more complex learning opportunities for both themselves and their students" (Barone & Wright, 2008, p. 292). Perhaps student exposure to various multimedia modes outside of school is more beneficial than teachers have previously realized. Kinzer and Verhoeven (2008) stated that,

> Technology is seen as a means of making learners skillful and at the same time engaged in selecting activities, in attending to specific parts of these activities, and in applying strategies for problem-solving. It is believed that [new] technologies can support cognitive processes to make literacy learning more efficient, effective, and appealing for all students. (p. 2).

Technology use in classrooms has the potential to assist teachers in providing powerful instruction, however, it should not be used in isoloation, rather, social interaction and hands-on learning should also take place (Hillman & Moore, 2004). Barone and Wright (2008) offer three important ideas for teachers to consider when introducing new technologies, such as IWBs, into a learning environment:

1.   Simply using software programs on computers does not prepare students for new literacies' expectations.

2.   New literacies are deictic in that they constantly change and require teachers to embrace these changes.

3.   New literacies are essential in classrooms so that equal opportunities are offered to all students. (pp. 292-293)

Students, teachers, parents and administrators must work together in adapting new technologies into schools (Barone & Wright, 2008). New technologies require a shift in teaching practices and possibly philosophies (Hassett, 2006). If students of today's society are to read and write for meaning, they must first be able to make meaning from their own literacy environments which are worlds apart from the classroom environments their teachers experienced (Barone & Wright, 2008).

Interactive Whiteboards and Developing Early Literacy Skills

The large display and direct input from a computer source consequently makes the IWB a tool that can be used for developing literacy related skills (Solvie, 2004). In an early childhood classroom, students can easily manipulate the screen

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with their fingers or with a special pen. Computer applications can be easily accessed or manipulated with a pointer allowing young children the ability to "control video clips, animations, slide shows," as well as, written text and drawn images (Dyrli, 2008, p. 66).

Solvie (2004), a primary-level teacher and a professor at the University of Minnesota became interested in exploring how current technologies, such as the interactive whiteboard, could be used as an effective teaching tool. Solvie received a grant from SMART Technologies, the leading distributer of interactive whiteboards to research the effectiveness of using an interactive whiteboard in her first grade classroom. She received an interactive whiteboard in 2001 and published her first article in 2003. Since then, she has published several articles for SMARTer Kids Research Program, the National Reading Association and in journals such as *Educational Philosophy and Theory*. Solvie (2004) integrated the interactive whiteboard into her teaching practices and discovered that it created an active environment for literacy learning. Her students were able to manipulate texts and view audio and visual cues with the touch of a screen, which enhanced their engagement. The interactive whiteboard also served as an organizational tool for her. She could easily rearrange lessons through software programs and save slides to review later. The tool enabled Solvie to make effective use of her time and reach all learners. According to Solvie (2004), "incorporating the digital whiteboard in our practice as a tool to teach early literacy skills may help us reach young children in many positive and powerful ways" (p.487) and ways that have yet to be discovered.

Literacy instruction no longer needs to be limited to a written text-only engagement. The use of interactive whiteboards holds the possibility of sharing reading experiences in a whole new way. For example, Solvie (2004) was able to model the ways in which readers interact with written texts. She was able to project a written text on the visual display and manipulate it through interactively highlighting or writing on the touchscreen to show text features and functions. She was able to provide shared reading and writing experiences, such as, morning messages, graphic organizers and vocabulary activities and could easily save their work for future lessons. Solvie believes that the use of interactive whiteboards has the potential to change the face of instruction on many different facets. According to Solvie (2004), this tool has the potential to excite new readers and writers and establish more effective methods of instruction .

Conclusion

Imagine school as a place where students go to "get connected," both with technology and with others locally and globally; a place where teachers introduce students to new technologies or at least show students how they can be used to gain knowledge. Schools of the future may be much like what was described in the initial pages of this chapter. Symonds (2000) predicts that in the future,

> Students will carry wireless devices, teachers will collaborate with
>
> colleagues across the globe and rely less on textbooks, classrooms will
>
> have cooperative learning tables instead of rows of desks, and students

will work together to solve problems. Distance learning will provide children with virtual field trips and the ability to meet and talk with people throughout the world, parents will exchange e-mails with teachers and view their child's work online, tests will give way to electronic assessments, homework will be more individualized, and tutors will be available for online help (as cited in Morrow, Barnhart & Rooyakkers, 2002, p. 229).

Incorporating interactive whiteboards may be critical to establishing an up-to-date learning environment. Although many students are already equipped with technological devices, the interactive whiteboard can possibly bridge the gap from a techno-society to tech-friendly schools. In addition, interactive whiteboard usage may change the face of literacy instruction for classrooms of the future. Thus, research in the United States related to the effectiveness of interactive whiteboards in primary literacy environments, is needed to understand the implications of technological change.

CHAPTER 3: Methods

As a first grade teacher and literacy specialist, I was curious to learn more about how students respond to interactive whiteboards and the potential this form of technology holds for the teaching and learning of literacy. The purpose of my study, then, was to describe the implications whiteboards have on literacy instruction in K-2 literacy environments. I chose to use a qualitative research design and collected data through observations and interviews in a naturalistic setting.

The methods described in this section are based on the following research questions:

1. How do interactive whiteboards support the literacy development of K-2 students?

2. What strategies do teachers use with interactive whiteboards during literacy lessons?

3. What are the perceptions of teachers' and students' regarding interactive whiteboards during literacy lessons in K-2 classrooms?

Research Environment and Participants

I invited twenty-three students, along with their teacher, from the school in which I teach to participate through observations and interviews. I also invited a teacher focus group to participate through an interview session. I observed all

participants in their natural education settings: a first grade classroom in a suburban K-5 school located in western New York.

The community where the school district is located had a median family income of $70,372 in 2007. The average income for New York State is $53,514. The community is 93.5 percent White, 2.1 percent Black, 3.1 percent Asian and 1.3 percent of other races.

The elementary school has approximately 500 students. On average, 14 percent of students receive free or reduced lunch. The student population is 89 percent White, 4 percent Black, 4 percent Hispanic, and 3 percent Asian.

The school where I gathered data has provided several teachers with interactive whiteboards through a technology grant. In order to obtain an interactive whiteboard, teachers had to submit a request and be willing to become a technology coach in their respective buildings. As a technology coach, teachers are required to attend interactive whiteboard training seminars. Currently, twelve teachers in my building are technology coaches.

The first grade participating teacher has an interactive whiteboard installed in her classroom and she is a member of an action research group. She met five times throughout the year with other professionals to work collaboratively in order to gain more expertise with the interactive whiteboard, and is also a technology coach for the school district. Prior to the start of the 2008-2009 school year, the student and teacher participants had no experience with an interactive whiteboard.

The first grade teacher served as my teaching mentor. She is certified to teach regular education and special education and has been a first grade teacher for eight years. We have worked together for two years. I currently co-plan with her and many of my current teaching practices have been shaped by her philosophies. For example, we utilize the same guided reading model. In our classrooms, four to five students work independently on literacy centers and we pull guided reading groups during this time. We believe students should be given the opportunity to practice the reading and writing skills they are learning through guided practice and self-directed learning.

Student participants were from the teacher's first grade class. I asked for informed consent from all twenty-three students in the class (see Appendix E). During the observation sessions, I only collected data on those students who, along with their parents, granted consent. I selected participants for the student focus group based on the teacher's suggestions and informed consent from the parents and students (see Appendix E).

The teacher focus interview participants who I invited to participate were among a group of early childhood teachers who completed action-research related to the use of interactive whiteboards. The first grade teacher, a kindergarten and second grade teacher, and a literacy specialist were a part of the focus group. The kindergarten, first, and second grade teachers have an interactive whiteboards in their classrooms. The reading specialist, does not have an interactive whiteboard in her reading room; however, she frequently pushes in to kindergarten through second

grade classrooms with interactive whiteboards. She also co-teaches the kindergarten in a room that has an interactive whiteboard. The focus group participants were also technology coaches within the school. I provided consent forms to the members of the early childhood action research group, including my teaching mentor, inviting them to participate (see Appendixes K and M). All professionals granted consent and participated in the focus group.

My Positionality

I teach at the same grade level and at the same school in which I conducted my research study. I am certified to teach regular and special education birth-grade 6 and will be certified as a reading specialist in August 2009. I have one year of teaching experience at the kindergarten level and two years of teaching experience in first grade.

The teacher I observed is my mentor teacher, thus her style of teaching has had a great deal of influence on my own practices. I have never used an interactive whiteboard; I conducted this research to determine if it would be an effective tool in my classroom. I have already gained professional experience from working with the action research group through informal discussions. Next year, more teachers will be selected to become technology coaches, and I hope to be among the participants.

Procedures of Study

Data Collection

I conducted my study during the last few weeks of 2008-2009 school year. I completed four 25-minute observations during literacy instruction over a period of six weeks during literacy lessons in which the teacher used an interactive whiteboard. The data I collected during the observations centered on the students' verbal and nonverbal behaviors. I also observed and documented how the classroom teacher used the interactive whiteboard in her literacy instruction.

To record my observations, I used an observation sheet I created specifically for this study (see Appendix A). The observation sheet enabled me to document the strategies the teacher used with the whiteboard as well as student interactions with the technology.

After the four observations, I conducted a semi-structured focus group interview with a small group of seven first graders who, along with their parents or guardians, provided informed consent. During the focus group interview, I asked a series of questions related to the students' experience with and opinion of utilizing the interactive whiteboard to enhance their reading and writing skills (See Appendix B). Students were allowed to talk to one another while I directed questions to each student individually. This allowed students the opportunity to answer independently for the most part, however, at some times students responded and participated along with other's responses. A goal of the student focus group was to understand the first graders' perspectives on their use of the interactive whiteboard.

I also conducted a focus group interview with K-2 teachers who are members of the action research group at my school. Only teachers who provided informed consent participated in the focus group interview (see Appendix K). A goal of the teacher focus group interview was to better understand the teachers' strategies and the perspectives they hold in terms of using interactive whiteboards for literacy instruction. The focus group interview questions (see Appendix C) were derived from my research questions and literature based on the work of Vygotsky (1978), Solvie (2003), Hassett (2006), and Davis (2007). The focus group interview lasted approximately 45 minutes.

During the interview, we sat at a round table and the questions I asked flowed into conversations. The dialogue occurred mostly between the colleagues being interviewed, I interjected only to ask questions, clarify, or direct the conversation away from tangents. The second grade teacher and the kindergarten teacher were the most talkative and lead most of the conversations. The teacher that I had previously observed was actually the quietest member of the group.

I audio-recorded the focus group interviews. My thesis advisor and I were the only individuals who listened to the tapes. When not in use, the tapes were kept in a locked drawer and they were destroyed upon completion of this study. I have also given all participants—both students and teachers—pseudonyms.

Data Analysis

Ongoing data analysis occurred during the initial stages of completing the four twenty-five minute observations through to the final stages of reviewing audio-tapes from the student and teacher interviews. I first reviewed my anecdotal records from the observations and coded my notes based on positive and negative verbal and non-verbal behaviors. I looked for evidence of how students responded to this tool and how effective it was in engaging students for learning activities. I also analyzed my observations based on interactive whiteboard strategies the teacher used to enhance both reading and writing skills. I recorded the applications the teacher used as well as the lessons that were being taught. Since I teach the same grade level with a similar teaching style, I was also able to compare how I currently teach the content and how the teacher with the interactive whiteboard teaches the content and how useful this tool might be in developing reading and writing skills.

Lastly, I analyzed the data from the focus group interviews. I transcribed the audio-taped recordings. I also identified common themes by comparing student participants, teacher participants and lastly student to teacher participants. Through interpretations of interview responses, I was able to explore student and teacher perceptions regarding interactive whiteboards and their relevancy in K-2 classrooms.

Criteria for Validity

Triangulation of my data occurred through the analysis of observations, the student focus group interview, and the teacher focus group interview. The data that I collected in this study will be continuously interpreted and new themes may emerge that bring about further questions or considerations.

Limitations of the Study

I am not able to generalize the finding of this qualitative study. My background and personal relationship with the lead teacher may have posed unintended bias. The participating teacher's methods of instruction and technological preferences may have influenced the data collected. The demographics of the students and teachers and the location of the school—western New York—limited my ability to generalize the findings. I also worked with a limited number of students during the focus group interviews; seven first grade student participants. Four observations specifically related to literacy instruction within a limited amount of time also narrows the scope and focus of my study.

CHAPTER 4: Results

The purpose of my study was to describe the implications interactive whiteboards had on literacy instruction in K-2 literacy environments. I hoped to explore how interactive whiteboards supported literacy development and what strategies teachers currently used during literacy lessons. I also wanted to learn more about the perceptions teachers and students had about their use of interactive whiteboards.

My research study took place in a suburban elementary school over the course of two months. I collected data in three stages. During the first stage, I completed observations in a first grade classroom during literacy instruction in which the teacher and students used an interactive whiteboard. In the second stage, I conducted a focus group interview with seven students from the classroom in which I observed. During the third stage, I completed a focus group interview with four teachers who had experience using an interactive whiteboard in a K-2 setting. Throughout this study, I took on the role of an observer, documenting what I saw and heard from the teachers and students.

In this chapter, I have included descriptions and analysis of the data from the three stages of data collection. I also include discussions centered on how the findings align with my research questions.

Stage One: Observations

Over the course of five weeks, I completed four observations of Mrs. Reese and her first grade students. See Figure 4.1 for a map of the classroom. Through these observations, I hoped to see how the teacher and students used the interactive whiteboard during literacy lessons. I also sought to answer the questions, how do interactive whiteboards support the literacy development of K-2 students? And, what strategies do teachers use with interactive whiteboards during literacy lessons?

Figure 4.1: Map of Mrs. Reese's Classroom

Easel	Shelves	Bookshelves	Closet

Rug

SMARTboard

Table 1

Table 2

Table 3

Table 4

Table 5

Computers

Coat Hooks

Laptop Table

Guided Reading Table

Shelves

Door

Bathroom
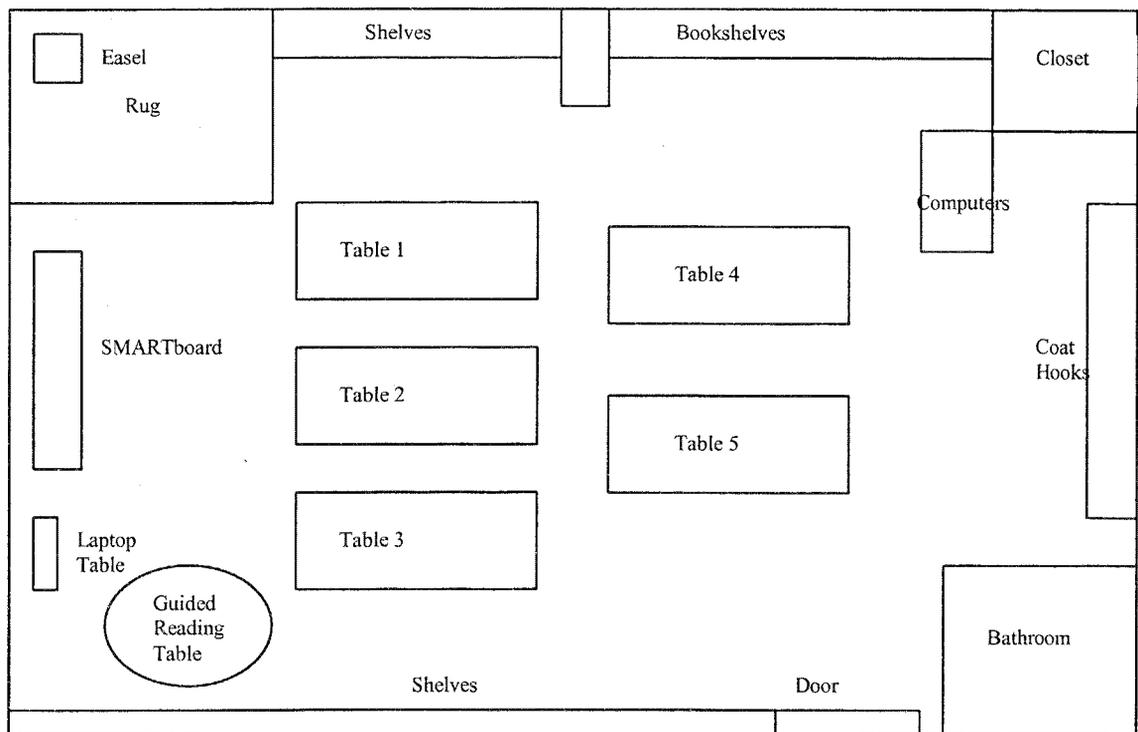
Mrs. Reese's first grade classroom has had an interactive whiteboard for the past nine months. The class is comprised of twenty-three students, all of whom have had no experience using an interactive whiteboard prior to this school year. Mrs. Reese has attended professional development opportunities such as interactive whiteboard training and an advanced interactive whiteboard application workshop developed by the district. She is a member of our school's teacher action research group, which is dedicated to studying the effective use of the interactive whiteboard for teaching and learning. Mrs. Reese is also a technology coach for our school. As a technology coach, she invites teachers who may or may not be new to using the interactive whiteboard, to observe her teaching. Mrs. Reese also provides support for teachers who need assistance incorporating the interactive whiteboard into their teaching practices.

Below, in my description, I use the term "SMARTboard" to identify the interactive whiteboard in this classroom.

Observation One: May 14, 2009

During my first twenty-five minute observation, which occurred in the afternoon, the students were seated at their tables and Mrs. Reese was positioned in the front of the room close to the SMARTboard. Mrs. Reese recognized that the students at the back table might not have a clear view of the board, so she invited those students to move their seats closer to the board. Five students seated at table four responded by eagerly pushing their chairs close to the SMARTboard.

Mrs. Reese began the lesson by verbally reviewing a previous lesson and set the stage for the poetry lesson she was about to deliver. At this point, the SMARTboard displayed a blank but glowing blue screen, and students wriggled in their seats with anticipation. She stood adjacent to the SMARTboard and asked students, "Who remembers what kind of poems we wrote last week?"

A girl seated at table one was called on and answered, "Haikus!"

Mrs. Reese responded by stating, "And how many syllables do haikus usually have?" She moved her arms toward the class to signal that they could all answer. The students shouted, "Five, seven, five!"

Mrs. Reese began the new lesson by stating, "Today we are going to discuss a different kind of poem. This kind of poem is called a couplet." She then showed the class the book, *Where the Sidewalk Ends* (Silverstein, 1974) and said, "This book has many couplet poems in it. I chose one to read today, when I am finished reading we will talk about what makes this poem a couplet." She read the poem, entitled *Sick* (Appendix M). During the reading, students listened attentively, laughing at certain parts.

After reading the poem, she brought up a typed version of half of the poem on the SMARTboard using her laptop. All twenty-three students were focused on the large version of the poem on the screen. Mrs. Reese then asked the students, "What do you notice about this poem I just read?" Eight hands went up in response to her question.

A girl at table five was called on and stated, "There are rhyming words!" Mrs. Reese circled one rhyming pair, "mumps" and "bumps" on the board with the SMARTboard marker.

Another student shouted out, "Can you call us up to the SMARTboard to find them?" Mrs. Reese agreed and twenty-three hands shot up. She first called on a boy seated in front (one who had moved from table four) to go first.

When he approached the SMARTboard he asked, "What color?"

She responded by saying, "You can choose." He smiled and chose green, a different color than Mrs. Reese had used. She then told him, "Call on a friend to go next." He chose a boy seated at table one who jumped out of his seat and quickly grabbed the blue marker and circled another rhyming pair. This child called on another student named Devin. Devin took the blue marker from him and circled two more words. Mrs. Reese concluded this part of the lesson by asking, "What do you notice about a couplet?" She called on Lisa seated at table three.

Lisa responded by saying, "The end of each sentence has rhyming words."

Mrs. Reese clarified by stating, "Great observation! Every two lines in a couplet poem rhymes. Couplets can also be about anything...sometimes they are even silly like this poem!"

During the next part of the lesson, Mrs. Reese touched the bottom corner of the SMARTboard to go to the next page she had prepared. On this page, an electronic form of the activity sheet that the students would independently complete

appeared (Appendix N). Mrs. Reese read the directions on the projected image, and asked, "Can anyone think of our first line?" She called on Teresa, seated at table five.

Teresa replied, "I like recess?"

Mrs. Reese stated, "That's an excellent idea...but let's think...are there a lot of words that rhyme with recess?"

Tess answered, "Umm, no."

Mrs. Reese continued, "What if we wrote, at recess I like to play?" Students nodded in agreement. As she began to write on the board a mishap occurred, the screen that she tried to write on moved. Mrs. Reese stopped and stated "Oh no, my screen moved...what should I do?"

The students shouted excitedly, "Lock it!" Mrs. Reese touched the screen a few times and talked them through what she was doing.

She then stated, "Is this good? Is it lined up now?"

The students replied by shouting out, "Yes!" Mrs. Reese finished writing the line.

She then asked, "Can we find some rhyming words now?"

Teresa shouted out, "Yeah, like say and day!" Mrs. Reese wrote "say" in the next box, below the line she had written, and called Teresa to the board to write "day." Teresa scurried to the front and quickly grabbed the red SMARTboard marker and began to write. Mrs. Reese instructed Teresa to call on someone who had not had a turn to come to the SMARTboard and write another rhyming word. Teresa called

on a girl seated at table five who chose a blue SMARTboard marker and wrote "may" in the box.

Mrs. Reese pointed to the next set of lines on the SMARTboard activity.

"The next step in writing a couplet is to think of a new line from our poem that ends with one of the words that we just wrote in this box (pointed to box)." A student sitting up front shot his hand up before she finished speaking.

She called on him when she was finished and he stated, "I know, I wish we have recess all day!"

Mrs. Reese wrote the line on the board (changing "have" to "had") and then stated, "Okay! So our couplet sounds like this, 'At recess I like to play, I wish we had recess all day,' does this work?"

Students responded by shouting out, "Yeah!" She then transitioned them to begin the same activity independently at their tables. She reminded students to check the SMARTboard if they forgot how to complete any part of the activity.

Observation Two: May 28, 2009

I completed my second twenty-five minute observation during another whole group, afternoon lesson. The lesson that occurred on this day was a review of what the students had learned the previous week. Students were again seated at their tables, and five students from table 4 had pulled their chairs closer to the SMARTboard. The screen was blank and glowing blue as Mrs. Reese reviewed the definition of a noun with the students.

Mrs. Reese then used her laptop to bring up a new screen on the SMARTboard. The screen displayed the title, "The Vortex" and underneath the title were two moving spirals, one entitled "Yes," and the other "No." Mrs. Reese had prepared this activity in advance using SMARTboard software. Beneath the spirals were a set of twenty-four random words such as "tree" and "jump." As soon as the image was visible, the students began commenting on the spirals and the words. One student stated, "Mr. Bell? Why is the principal's name on the SMARTboard?"

Mrs. Reese then explained the directions by stating, "This is called the Vortex. There are two spirals here (pointed to spirals). One spiral likes to eat words that are nouns (pointed to "Yes" spiral) and one spiral likes to eat words that are not nouns (pointed to the "No" spiral)." She demonstrated the process by asking the students which spiral they would put the word "tree" into? The students responded by saying "yes!" Touching the screen, Mrs. Reese dragged the word "tree" with her finger onto the "Yes" spiral. The word spun around and appeared to get sucked into the spiral.

Immediately, the students responded with shouts of "WOAH!" and "COOL!"

Mrs. Reese then explained, "If you put a word in the wrong spot it will get spit back out like this (dragged "chair" onto the "No" spiral)." Students responded by laughing. She continued, "Should we put words where they don't belong?"

Students responded by stating "Noooo."

Mrs. Reese then asked the class if they would like to try it and twenty students put their hands up.

The students took turns going up to the SMARTboard and moving words into the spirals. Mrs. Reese invited each student to call on someone new when he or she was finished taking a turn. Several students called out, "Pick me, pick me!" or other sound effects such as, "Woo!" and "Ahh!" Mrs. Reese stood to the side monitoring the students who had difficulty sorting a word to its correct spiral.

Toward the end of the lesson, a special education instructor came into the room to pick up a group of students receiving academic intervention services. Three students stood up and one stated, "Aww, but this is fun, look what we are doing Mrs. Allen. I want a turn. Can I go before we leave?" Mrs. Reese allowed the students to each have a turn before they left.

All twenty-three students had a turn and seemed to easily manipulate words on the screen with their fingers. At times a pop-up screen would appear on the screen, and students would close out of it with their finger, without asking their teacher for direction.

Observation Three: June 4, 2009

During this mid-morning observation, Mrs. Reese was seated at a round table delivering a guided reading lesson to a small group of students. The rest of the class was engaged in literacy centers throughout the classroom. One center was on the SMARTboard where a group of four boys were playing an interactive game. They were using plastic hand pointers to maneuver through a Web site, "Brain Games" (Sheppard Software, 2009). To play the game, "Battle Defense," it was necessary for

the students to move the screen up and down by touching the side bar. The students did this with ease by using the pointers. When a new player would begin, the students would bring up a keyboard on the screen and type in the player's name.

The game resembled the game "Battleship" and the students in the group seemed to be mesmerized by watching the student whose turn it was to play. When it was time to switch players there was some disagreement as to who was to play next. One student, taking on a leadership role, solved the issue by telling the rest of the group the order of play. During Devin's turn, an advertisement for a video game that did not look age appropriate popped up on the screen. Another student in the group immediately stated, "Quick go back! Close out of that!" Devin closed out of it and went back to playing the game.

Another discrepancy occurred after Devin's turn, when he stated, "I just beat one whole level, I should go again."

The student who had decided the order of play firmly stated, "Nooo, it goes, us first then you again."

Devin stepped back with a look of defeat. The next player easily manipulated the SMARTboard screen to bring up a keyboard screen and typed his name in to begin his turn.

At one point, a girl from another center came over and asked, "What are you doin'?"

The student playing the game stated without looking at her, "The battle game." The girl watched for a moment and then went back to her center. Each student in the group had a chance to play the game twice.

Observation Four: June 16, 2009

This twenty-five minute observation occurred in the morning as the students were entering the classroom and getting started on their morning work. Students entered the room at different times and their routine included completing various activities, some of which used the SMARTboard.

After they unpacked their bags and settled into their seats, the students took out a morning work recording sheet that they kept in their folder. The morning work for the day was displayed as five questions on the SMARTboard. The questions were listed as follows:

1. $11 + 7 = $ _____

2. $9 - 6 = $ _____

3. Ann planted two rows of five bulbs in her garden. How many bulbs did she plant in all?

4. Write two adjectives to tell about "Summer"

5. Fix the sentence: i go to the pool yesterday

Some students moved closer to the board and worked either on the floor or at a nearby table. During this time they were also required to record their lunch choice on the SMARTboard. Students went up to the SMARTboard and touched the

controls in the bottom corner of the screen to move to the next page. The lunch count chart appeared on the next page and listed the lunch choices for the day on a graph. The students wrote their initials with a SMARTboard marker under their choice. There was also a column labeled "brought," so all students were required to check-in this way each morning. After completing their lunch choice, the students used the controls to go back to the morning work page. One student changed the page to make his lunch choice and forgot to change it back. Another student came up to him and stated, "You have to change it back!"

The student replied, "Oh, yeah." He quickly used his finger to touch the control in order to switch it back.

As the students worked independently, Mrs. Reese worked one-on-one with a student who was struggling to complete her work. A student approached Mrs. Reese and asked, "What does 'bulb' mean?" Just as another student was about to ask the same question, Mrs. Reese moved to the front of the room and used a colored SMARTboard marker to cross out the word "bulb" on the screen and write the word "tulip."

She announced, "Check question number three, a bulb is like a seed to plant a tulip, so if she planted two rows of five tulips, how many did she plant?"

A few students responded by stating, "Ohhhh." Mrs. Reese then went back to helping the student at her table draw two rows with five dots in each row. When most students were finished, she called a student to the front of the room to record the

lunch choices on a note for the office. She then saved her slightly altered morning work slide to come back to later in the day.

She stated to the class, "Put away your morning work. After Morning Meeting, we will correct this morning's work on the SMARTboard."

Discussion

During the four lessons I observed, Mrs. Reese used different presentation and preparation methods. In the first lesson, Mrs. Reese typed the poem in a Word Document and uploaded it to the SMARTboard software. She also uploaded the worksheet to the SMARTboard software and was able to complete the activity as a whole group with her students. Uploading the activity sheet to the SMARTboard was beneficial in that it enabled all students to be able to see the directions, and provided a model of how to complete the activity, before they actually completed it independently.

In the second lesson, Mrs. Reese, used a program included in the SMARTboard software applications. There are a variety of game templates in the software bundle that SMART Technologies provides with SMARTboard purchased by schools. These game templates allow teachers to insert their own words or trivia and instantly create a game. For instance, with the game "The Vortex," Mrs. Reese only had to type in the words she wanted to use into a variety of drop boxes under "Yes" and "No," she then was able to click "Create" and a game that she was able to play with the whole class was uploaded.

The game students were playing independently during Observation Three was accessed through the Web site, http://www.sheppardsoftware.com/. During center work time, students in this class typically complete a literacy related game that Mrs. Reese has chosen from the site, as in the "Battle Defense" game.

During the last observation, Mrs. Reese had uploaded a workbook page from *Daily Math Review* (Evan-Moor, 2004). In addition, she changed the last two questions, to make them literacy-related. She was able to upload the workbook page by using a scanner and then saving it to her SMARTboard software. She created the lunch choice graph using Microsoft Word. She uses the same graph every day, just changing the lunch choices.

From my four observations, it is clear to me that Mrs. Reese has practiced using her SMARTboard in order to display and use the various methods, approaches and techniques. She seemed very comfortable and confident using the technology during all observations. Even when the slight mishap occurred, she took it as an opportunity for a teachable moment with her first graders. Mrs. Reese is also aware of the fact that only one child can use the SMARTboard at a time. To compensate for this, she makes sure that all students have a turn using it. She frequently allows students to chose the next participant, and encourages students to call on eachother fairly. Allowing students to call on others releases responsibility on her part and builds independence as students learn to take turns appropriately.

Throughout all four observations, I was surprised by the students' ease with and use of the technology. They were able to easily manipulate the screen using their

fingers, a pointer or a marker. They demonstrated the ability to use the SMARTboard in a whole group and a small group setting. During the four observations, no student hesitated to use the SMARTboard, rather all twenty-three displayed an eagerness to have a turn on it.

The four observations showcased a variety of ways a teacher and her students can use a SMARTboard for literacy related activities. Resources can be made by the teacher, or gathered from the Internet. And the SMARTboard can be used to assist the teacher in delivering whole group lessons, to keep students motivated and engaged during center work, or to facilitate a classroom routine that students are responsible for completing independently.

Stage Two: Student Focus Group Interview

I conducted a twenty-five-minute focus group interview with seven first grade students, three boys and four girls, from Mrs. Reese's classroom. The purpose of the interview was to understand the students' perceptions of using the interactive whiteboard during literacy lessons. The interview occurred on the afternoon of June 22, 2009 during the students' recess period and took place outside at a picnic table.

The background information I provide about each child is based on the perceptions I formed during my brief interactions with them during the focus group interview. Because I am not the students' classroom teacher, I had limited information regarding their social, academic, and family background.

Luis

Luis appeared to be a very outgoing child. He seemed excited to answer my questions and answered each question without hesitation. He likes using "special Web sites" on the SMARTboard and especially likes "to play the Wii on the SMARTboard." Nintendo Wii's were purchased this year through a health and fitness grant and students often play Wii Fit during indoor recess.

Luis described the benefits of using the SMARTboard by stating, "I don't know it's just really helping us and you don't have to get paper, it's on the screen so you don't waste it." Luis liked to use it because it is just like a "blown-up computer." As a drawback he stated that "the only bad part is that if you are really tall you can bonk your head on the thing above you" referring to the projector. When I asked Luis about how the SMARTboard helped him to be a better reader or writer, he stated that, "It doesn't actually teach you to write, but you can write words on it and Mrs. Reese can teach you and correct you and she makes you a better writer. The SMARTboard just makes it fun."

Lisa

Lisa seemed to be a quiet child by nature. She was a bit reserved when I asked her questions. I gave her more wait time as she thought carefully and for an extensive period of time between each question. Her answers were very brief and she did not answer all of the questions.

She liked the SMARTboard because, "we can play games on it." She particularly likes to "play starfall." Starfall (http://www.starfall.com) is an interactive literacy Web site. Lisa said that Mrs. Reese "shows new word wall words and new centers on it." Lisa felt that the activity "Look, Write, Check" (BBC, 2009) on the SMARTboard was helping her become a better reader and writer because, "You get to try it by yourself and if you get it wrong it will say try again."

Teresa

Teresa appeared to be a timid student. She answered my questions briefly listing what she liked and how her teacher used the SMARTboard. She liked that "it (the SMARTboard) makes things on the computer bigger." She also likes that she can "play games on it, like Sheppard Software." Sheppard Software is an interactive Web site, the Web site that students' used to access Brain Games from observation three. Teresa stated that they used the SMARTboard to, "do lunch count (observation four) and to do things we are learning about." Teresa felt that it helped her become a better reader and writer by, "practicing reading and writing on it."

Kelly

Kelly appeared to be social girl. During the interview she expanded upon her peers' ideas to answer the questions I asked her. The things she liked about the SMARTboard were that it "has games on it and I can draw on it, and write on it." She liked using the Web sites "Sheppards Software and BBC." BBC is the largest

broadcasting corporation in the world (http://www.bbc.co.uk/schools/). Stationed in the United Kingdom, it broadcasts television shows as well as many interactive games and video clips that can be accessed through their Web site. On the BBC Web site, Kelly likes "playing math games and writing." She felt that the BBC site helps her become a better reader because "on BBC there are questions that help me like what would fit in this sentence." Kelly also believed that the SMARTboard helped her be a better writer because they "got to write on it for lunch count" every day.

Stephanie

Stephanie was a talkative child who was able to recall many ways that her class used the SMARTboard. She stated at the beginning of our conversation that "you can do fun things on the SMARTboard." When I asked her for examples she listed several such as "watching videos on it, playing games like Subtraction Pyramid on it, Lunch Count, and Workboard (literacy centers)." When asked if it was helping her become a better reader, Stephanie stated that it was "by playing reading games on the SMARTboard." She stated that it helped her become a better writer "by writing on it, because I write bigger words."

Caleb

Caleb seemed to be one of the quieter boys in the group. He was in agreement with many of the answers of his peers. He said that the SMARTboard was used for "new workboard (literacy centers)" in his classroom and that he liked "playing the

Wii on it." He also stated that he liked "playing interactive games" on the SMARTboard. Caleb said that "going on Starfall (http://www.starfall.com/)," helped him to become a better reader because "they have reading games."

Devin

Devin was a talkative and inquisitive student. During the focus group interview he frequently commented on his peers' ideas and positively reinforced the other participants when they shared ideas. He stated that he liked the SMARTboard because "it is interesting to see how the computer knows what to do when you touch the screen." He agreed with the others when they stated that they use the SMARTboard for introducing new centers and for lunch count. His favorite thing to do on the SMARTboard is to "play games like 'Battle Defense' (observation three)." Devin felt that the board helped him to become a better reader and writer because it can "connect to the computer and there's lots of programs on there." He enjoys when Mrs. Reese "gives us lessons from the computer and sometimes we watch videos like YouTube (http://www.youtube.com/) that show you how to write letters."

Discussion

The tables below display the students' responses to the interview questions. In some cases, students answered questions with more than one response; therefore the total number of responses exceeds the number of participants.

Table 4.1: What do you like about having the SMARTboard in your classroom?

Responses	Web sites	Games*	Wii	Other
Number of Students	1	3	1	3

Table 4.2: How have you used the SMARTboard in your classroom?

Responses by Category	Things Teacher Does With It	Things Student Does With It
Number of Students	5	10

Table 4.3: What are some of your favorite things to do on the SMARTboard?

Responses	Web sites	Games*	Wii
Number of Students	6	2	1

Table 4.4: How do you think using the SMARTboard has helped you to become a better reader/writer?

Responses	Practicing	Web sites	Games*	Software	Videos	Other
Number of Students	3	3	2	1	1	2

* Students used "games" to refer to games found on Web sites, software, teacher created materials, or the Wii.

When viewing the students' responses across several questions, it is clear to me that the students understand that the SMARTboard was a tool in the classroom

that they could use to facilitate their learning, not just a tool used by the teacher to deliver instruction. This understanding is reflected in the high number of responses (10) in category Things Student Does With It? to the question: How have you used the SMARTboard in your classroom? (see Table 4.2) The students' understanding is also reflected in their responses to the question: How do you thinking using the SMARTboard has helped you to become a better reader/writer? (see Table 4.4) to which three students responded that "practice" was essential. But perhaps it was Luis who most clearly demonstrated his clarity of this form of technology as a tool when he said, "It doesn't actually teach you to write, but you can write words on it and Mrs. Reese can teach you and correct you and she makes you a better writer. The SMARTboard just makes it fun."

The students' responses, specifically the vocabulary they utilized throughout the focus group interview indicates, that they were comfortable using the SMARTboard and fluent with computer terminology. The students' ability to name specific Web sites and computer applications shows their familiarity with not only SMARTboard software, but also computer programs.

During the focus group interview, all seven students shared their positive perceptions of the SMARTboard. They contributed to the interview excitedly, and were engaged while explaining their thoughts on using the SMARTboard during literacy lessons and activities. All students contributed to the conversation and were able to name a variety of things that they like to do on the SMARTboard. In addition, the things that they shared related to what they liked doing on the SMARTboard,

were all things that they had an opportunity to do by themselves, not things they had watched the teacher do on the SMARTboard.

Stage Three: Teacher Focus Group Interview

I conducted a forty-five minute teacher focus group interview with four early childhood teachers who are members of our school's action research team. As a team, the teachers have met five times throughout the year to share ideas, learn new things, look for useful Web sites, and to create a Wiki page for other teachers to use as a resource.

The purpose of the focus group interview was to gain the teachers' perspectives of the following questions:

How do interactive whiteboards support the literacy development of K-2 students?

What strategies do teachers use with interactive whiteboards during literacy lessons? And,

What are the perceptions of teachers' regarding interactive whiteboards during literacy lessons in K-2 classrooms?

The following narratives include the key points of our dialogue during the interview that took place on June 24, 2009.

Mrs. Reese

Mrs. Reese was the teacher I observed during the first stage of my data collection. She is a first grade teacher who has taught for eight years. This was her first year using the SMARTboard. Mrs. Reese was actually the quietest member of the group, and did not answer all of the questions that I asked. Her responses were brief, but reflected individual ideas and interpretations. She chose to have a SMARTboard because "you can save your work," and use it over again. After her SMARTboard was installed, she attended "BOCES training and district training," to become more familiar with how to use the board. In terms of literacy instruction, she stated, "I love using the fridge magnets," which is an application included in the SMARTboard software. When used, teachers can spell words on the screen using the interactive magnets. Mrs. Reese uses the magnets to introduce new sight words to her whole class. For small group management, Mrs. Reese suggested, "only about four students in a group at the SMARTboard at a time."

According to Mrs. Reese, the drawbacks to using the SMARTboard for literacy instruction were that students can use it "only one at a time." Also, she stated that "the shadow is really annoying; it's really hard that they have to write like this (stretched arm out and leaned back)." Unfortunately, the screen is touch-sensitive in only one spot at a time, thus, only one student can write, draw, or move objects on the screen at a time. The projector on Mrs. Reese's version of the SMARTboard is located above the spot where the user would write on the board. In order to have the touch screen and projector work together, the user must stand back so that there is no

shadow blocking the image. Despite these drawbacks, Mrs. Reese stated that "Yes, I do," feel that my students are further along in reading and writing this year because of our use of the SMARTboard.

Mrs. Celini

Mrs. Celini is a reading specialist. She does not have a SMARTboard in her reading room; however, she frequently pushes into kindergarten through second grade classrooms with SMARTboards. She also co-teaches the kindergarten extended-day program in Mrs. Breen's room that has a SMARTboard. Mrs. Celini was another quieter member of the group. She did not answer all of the questions, perhaps because she does not have as much experience with using the SMARTboard as the other teachers. Although she does not have a SMARTboard, she sees "the potential in motivating students in a new and creative way, eliminating many steps." She first saw the SMARTboard being used at "a mini-workshop in a National Science Teachers Conference," and seemed delighted with the opportunity to use it in her teaching.

Mrs. Celini felt that "our kids are coming to us nowadays far more technological, they are already wired that way," thus the SMARTboard engages students especially because, "it is so big." It is clear for all to see and this enhances students' computer skills as well. Teachers can model how to navigate through computer applications by "talking through things (such as), 'touch outside the box to make it go away'." Thus, through modeling and practice, students can then

"transferring," skills to the computer. Mrs. Celini also stated that using the SMARTboard teaches kids responsibility by "extending building community lessons...we are a learning community and this is our resource." Students need to have a sense of ownership over their learning, and it starts with "learning how to properly use and share important resources."

Lastly, Mrs. Celini agreed that learning to use a SMARTboard can be very overwhelming. Not having one in her room, makes it difficult to practice. She suggested that teachers new to SMARTboards, "just need to jump in and start somewhere." Also, there is so much to learn, so as a new user, "don't feel like you have to do everything" on the SMARTboard, just practice a little at a time.

Mrs. Every

Mrs. Every is a second grade teacher. She contributed a great deal to our conversation, answering every question, sometimes even talking over others, which indicated to me that she had very strong opinions of the SMARTboard and was eager to share these ideas with the group. She chose to have a SMARTboard in her classroom because she, "had stopped using the blackboard altogether and thought this might be a new way to engage students." She also stated that she "saw it in use and it seemed quicker for documenting things."

After using the SMARTboard for a year, she discussed a variety of instructional materials and computer programs that she uses in conjunction with the SMARTboard. For literacy instruction, she incorporates "Web sites students can use

grammar and phonics skills and (she) created a bunch of stuff for Making Words

(Cunningham, 1994)." In addition, her students, "listen to people read (for example)

Bookflix (Scholastic, 2009)...we (also) read newspapers and we read the weather

every day right online." Bookflix is a Web site available through Scholastic in which

students can listen to a variety of stories being read aloud. Mrs. Every also felt it was,

"great practice for at home too because (she) would send them to a Web site and they

had already practiced it on the SMARTboard. So for homework, if they had a

computer at home, they had seen it done and they knew they could manipulate it."

She also felt that students were transferring skills from using the SMARTboard to

using a computer. She stated that, "when I went to the computer lab, I had far less

questions (from students) about 'do I press cancel, do I say no, how do I get that

back?' because they had seen it done over and over again on the SMARTboard so

they were so much more adept at the computer itself."

Mrs. Every agreed with Mrs. Reese in that, "the one thing that I don't like is

that multiple people can't write on the SMARTboard at one time...it's the only

drawback, and every once in a while it freezes up." To solve the single usage

problem, Mrs. Every is always sure to explain to students and "forewarn them that for

some things not everyone would get a chance." Thus, students are taught not to

always expect a turn. Mrs. Every recommends a SMARTboard to teachers who are

considering it, and she agreed that "yes," she felt her students were "further along in

reading in writing this year." In fact she stated, "It felt like (we) just zoomed." Her

advice to new SMARTboard users is to, "find time to sit with colleagues and just jump in. Try it."

Mrs. Breen

Mrs. Breen is a kindergarten teacher. She was the most talkative member of the group, frequently sharing anecdotes related to her teaching experiences with using the SMARTboard. She stated that the reason she chose to have a SMARTboard in her classroom was because, "it allows you to have many resources at your fingertips while teaching."

Mrs. Breen stated the importance of having resources at her fingertips, and she displayed her learnings over the last year by sharing a variety of materials she uses on the SMARTboard. Like Mrs. Every, she also uses Bookflix (Scholastic, 2009). She felt that Bookflix was, "a great resource, but it is expensive." The district was using a trial version, and she wasn't sure if they would get it, "because there are a limited number of books," available. She also mentioned a similar Web site where students can listen to books being read out loud. She stated that, "Storyline Online Web site (BookPALS Storyline Online, 2009) has books come to life." In addition, for literacy instruction, she also uses "the SMARTboard as part of (her) ABC station and uses various Web sites or things (she) has created for word study, Making Words (Cunningham, 1994), and sight words (NetRover, 2009)." When she uses the SMARTboard for an independent station, she has the students "record their work and (she) feels they are getting a lot out of that." The most beneficial aspect of the

SMARTBoard and what makes it effective for Mrs. Breen "is that it is so engaging for kids, it gets their attention, it keeps their attention, even for the students that I feel have a hard time sitting still and paying attention, it's got them, it hooks them."

Mrs. Breen agreed with the other teachers stating, "it would be really nice if more than one child could be working on it at one time because on some of the sites it would be nice if they could work together, but they can't so that I think is a disadvantage." However, to overcome this disadvantage, Mrs. Breen is sure to provide "at least one opportunity for every child to use the SMARTboard every day." Mrs. Breen has made the SMARTboard part of her students' morning routine; her students' would do "the question of the day on it, which is one of the first things they have to do when they come in." The single use problem actually lends itself to teaching another important skill to students, that of being patient. According to Mrs. Breen, "it really teaches them to be patient because they all want to do it and so they really are patient."

Using the SMARTboard during literacy instruction in her kindergarten classroom has, according to Mrs. Breen, "absolutely...absolutely," made a difference in her students' performance this year in reading and writing. In addition, her students were more comfortable using the computer. She explained that, "it teaches them a lot of things so that if they use Microsoft Word on their own just normally they are going to know how to do a lot of those things because they have done it on the SMARTboard, so they are really learning a lot."

Mrs. Breen recommends a SMARTboard to other teachers and her advice is to, "not take on too much, you need to decide what couple of things you are going to use it for and use it for those and then add to it." If small steps aren't taken and support is not given, the SMARTboard "can be overwhelming…so make sure you have someone to talk to for some help." If practiced and used properly Mrs. Breen felt that, "the learning that takes place is far more beneficial for the kids…you (have the potential of) reaching more kids."

Discussion

I have compiled the teachers' responses in the tables below. In general, the teachers had positive responses, with a few negative responses depending on the question asked, to their work with the SMARTboard. In some cases, teachers answered questions with more than one response; therefore the total number of responses is greater than the number of participants.

Table 4.5: What made you choose to have a SMARTboard installed in your classroom?

Responses	Previous Exposure	Quicker Instruction	Student Motivation/ Engagement	Save Work	Resources Available
Number of Teachers	1	1	2	1	1

Table 4.6: What types of professional development have you participated in related to using the SMARTboard?

Responses	District Training	Out of District Training	Conference	Collaboration
Number of Teachers	1	1	1	2

Table 4.7: How has using the SMARTboard impacted your literacy instruction?

Responses	Web sites	Teacher Created Materials	Software
Number of Teachers	4	2	1

Table 4.8: What strategies have you found most effective when using the SMARTboard?

Responses	Engagement	Size, Brightness, View	Grouping Students	Routines	Other
Number of Teachers	1	3	2	2	5

Table 4.9: What strategies have you found least effective when using the SMARTboard?

Responses	Single Use Touch Screen	Screen Freezes	Shadow
Number of Teachers	4	1	2

Table 4.10: What resources and/or tools do you find most valuable in learning to use a SMARTboard?

Responses	Trial and Error	Collaboration	Web sites
Number of Teachers	2	1	1

Table 4.11: What resources and/tools do you find most valuable in teaching students to use a SMARTboard?

Responses	Modeling	Trial and Error
Number of Teachers	2	2

Table 4.12: What advice would you offer to teachers who are considering using an interactive whiteboard for literacy instruction?

Responses	Collaborate	Experiment	Learn it a Little at a Time	Attend Workshops
Number of Teachers	3	3	2	1

Table 4.13: Do you find in any way that your students are further along in reading or writing because of the SMARTboard?

Responses	Yes	No
Number of Teachers	4	0

During the interview, the teachers shared a wealth of knowledge and opinions

regarding using SMARTboards to enhance K-2 literacy instruction. The information

above indicates that the teachers had different reasons for choosing to have a

SMARTboard installed in their classroom. Examples of reasons included, motivating

students, having access to new resources, and being able to save your work. They also mentioned different types of trainings. Some of the professional development opportunites mentioned included trainings within the district as well as out of district training. In addition two teachers mentioned support from colleagues as being beneficial to learning to use this tool.

Positive Impact on Teaching and Learning

Although their initial responses differed, all four teachers shared a multitude of ideas related to the impact of having a SMARTboard and the resources that they use with the SMARTboard in their classrooms. At the end of the interview all the teachers stated that they felt the SMARTboard had positively influenced their students' literacy learning this year in comparison with previous years in which they did not have access to using a SMARTboard.

It is interesting to note that in Table 4.7, more teachers stated that Web sites (4) and pre-created materials (1) were what impacted their literacy instruction with the SMARTboard the most. Perhaps this is due to the novelty of the SMARTboard, and the fact that the teachers have not yet had an opportunity to create and save their own materials from year to year. Despite this, many felt the SMARTboard, regardless of what program was used, was an engaging tool for students because of its size and brightness. The teachers felt that they could engage students more readily because the students had a better view, along with the fact that the SMARTboard offered the ability to make learning interactive.

One Limitation of the Technology

In the interview, all four of the teachers mentioned that the number one drawback or limitation of incorporating a SMARTboard into a classroom was that only one child could touch and manipulate the board at a time. As a result the teachers have devised management systems to overcome this barrier. They suggested grouping students, using the SMARTboard in daily independent routines, and forewarning students about taking turns as alternatives to the limitation of the board.

Strategies to Effectively Integrate the SMARTboard

In terms of learning how to use a SMARTboard, the teachers suggested strategies related to collaboration, trial and error, and helpful Web sites. In order to teach students how to use the SMARTboard, the teachers mentioned providing opportunities for modeling use and for students to practice using it.

If teachers are given the opportunity to use a SMARTboard, it can be an effective tool as long as teachers are willing to try it and seek out support in learning this tool. The ability for teachers and students to use the SMARTboard effectively is reliant on opportunities to practice and learn new techniques.

CHAPTER 5: Conclusions and Recommendations

Imagine yourself back in the "classroom of the future" discussed in chapter one. It is now the first day of school. The students have arrived, checked in, made their lunch choice for the day, and started their morning work, all on their handheld device. Still lost and a bit confused, you stand in awe as the students diligently complete tasks more efficiently than ever without use of paper or a pencil.

Just as you are questioning your graduate degree in education and wondering what role you play as the educator in this impressive environment, a student raises his hand. You rush over to him, sighing under your breath, thankful that at least one student needs your help. Your excitement is short lived however as he asks you to turn on the interactive whiteboard so that the questions can be displayed, and wonders when you are going to model how to navigate through the morning work. He explains that they will submit their answers through the handheld device, the interactive whiteboard software will graph and display the results so that you can lead a class discussion in which the students will share their opinions, insights, and connections.

Before you have a chance to reply, the student leads you up to the front of the room where he demonstrates how to use the interactive whiteboard. Almost instantly, the questions are brought up and students begin sending their answers through their handheld devices called Senteos. The interactive whiteboard software begins to graph the data, and the student announces to the class that you would begin reviewing

the answers as soon as all of their information is sent. All the students submit their data and are facing front, waiting attentively for the next phase of the lesson. You breathe a sigh of relief, turn toward your students and begin a discussion of the graph.

Conclusions

This scenario may seem far-fetched or nearly impossible, but three themes presented in the vignette actually emerged from the observations and interviews I conducted during this study. In the study, I explored the implications for incorporating an interactive whiteboard into a K-2 literacy learning environment. After exploring the questions, how do interactive whiteboards support the literacy development of K-2 students? What strategies do teachers use with the interactive whiteboard during literacy lessons? And, what are the perceptions teachers' and students' have regarding using the interactive whiteboard for K-2 literacy instruction? I have gained a clearer and deeper understanding of the multiple roles interactive whiteboards can play in early literacy environments.

The three major themes I have discovered, and will expand on in this chapter, are: teachers' use of the SMARTboard enhances student engagement, teachers' and students' use of the SMARTboard supports students' computer literacy skills, and teachers' use of instructional and management strategies with the SMARTboard positively impacts students' literacy development.

SMARTboard Use Enhances Student Engagement

The first theme that emerged is the idea that the interactive whiteboard is a tool that educators can use to engage students in learning and facilitate their literacy growth and development. Similar to the students in the vignette, the first graders I observed were engaged with the lessons and activities that Mrs. Reese created and implemented using the interactive whiteboard. Evidence of engagement included the students' active participation during the lessons— raising their hands, enthusiastically moving their chairs closer to the SMARTboard, whispering "pick me, pick me!" and requesting a turn to complete the activity on the SMARTboard before leaving the room.

During the student focus group interview, several students stated that the SMARTboard was fun, and that they really enjoyed completing activities using it. Luis commented,

> If you go to a special Web site you can draw and do special things and it's so great to use it…it's just really helping us and you don't have to get paper it's on the screen so you don't waste it!

In addition, every student had a favorite thing that he or she liked to do on the SMARTboard.

During the teacher focus group interview, they discussed the ways in which the SMARTboard can engage students in the learning process. According to Mrs. Breen, a kindergarten teacher,

What makes it effective is that it is so engaging for kids, it gets their

attention, it keeps their attention, even for the students that I feel have

a hard time sitting still and paying attention, it's got them, it hooks

them…I think that the learning that takes place is far more beneficial

for the kids (6/24/09).

Mrs. Breen's comment aligns with Smith et. al. (2005) who stated that "the

most widely claimed advantage of IWB's is that they motivate pupils because lessons

are more enjoyable and interesting, resulting in improved attention and behavior" (p.

96). Evidence from this study supports the idea that the SMARTboard can be a useful

tool for motivating and engaging students and delivering literacy instruction.

SMARTboard Use Supports Computer Literacy Skills

Throughout this study, it became apparent in a variety of ways how students

in a classroom with a SMARTboard are more fluent and skilled with computer

software and the Internet. In the opening vignette, the students were accustomed to

using hand-held technology, even leading the teacher through the use of a

SMARTboard. During my first observation in the first grade classroom, I witnessed a

similar scenario when a mishap occurred and Mrs. Reese turned to the students,

asking their advice on what steps to take next (Observation One, 5/14/09).

Regardless of whether or not Mrs. Reese had prior knowledge to deal with the

situation, she relied on the students, drawing their problem solving abilities while

reinforcing their own knowledge of computer applications. In addition, during the

second observation (5/29/09), students manipulated the screen independently, and when pop-ups occurred, they were able to close out of them without asking for assistance. During my third observation (6/4/09), I witnessed students working in a small group at the SMARTboard. They independently closed an inappropriate pop-up window. They also demonstrated the ability to type on a keyboard on the SMARTboard and scroll up and down on Web pages using a pointer as a mouse.

Through student focus group interview, I was able to gain the students' perceptions of how using the SMARTboard facilitated their computer skills. Although no student came out and stated that the IWB made him or her better at using the computer, several clues lead me to this realization. First, the students had several opportunities to tell me about things that they do on the SMARTboard. All but one student (Luis) independently named a computer program or Web site such as "Starfall," "BBC," or "Sheppards Software." The students' vocabulary provided evidence of their knowledge of computer applications. For example, Luis stated, "I like to play games on a *website*. You have to *scroll* to the bottom and *hit full screen*, it's just like a blown up computer" (6/22/09).

During the teacher focus group, I collected evidence from the teachers to support the idea that the use of a SMARTboard helps students develop their computer literacy skills. Mrs. Breen, the kindergarten teacher, reflected on how using the SMARTboard had helped her students become more independent. Mrs. Breen stated,

> They started to learn things on their own that I didn't even anticipate
>
> like in doing the Question of the Day they could make their name

bigger or smaller just by touching the bottom corner box…So it

teaches them a lot of things so that if they use Microsoft Word on their

own just normally they are going to know how to do those things

because they have done it on the SMARTboard (6/24/09).

Thus, for Mrs. Breen's students, the opportunity to partake in trial and error episodes

on the SMARTboard, resulted in the students' ability to expand their skills not only

with the SMARTboard itself, but also with the computer.

Mrs. Every, the second grade teacher, also commented on how she actually

observed the effects of the SMARTboard stimulating students' fluency with other

computer applications. According to Mrs. Every,

I saw that when I went to the computer lab, I had far less questions

about 'do I press cancel, do I say no, how do I get that back?' Because

they have seen it done over and over again on the SMARTboard they

were so much more adept at (using) the computer itself.

According to the research I gathered, the first grade students did seem to have

more knowledge of computer applications after having experienced using the

SMARTboard for nine months and were able to transfer this knowledge to other

contexts, e.g., the computer lab. This idea aligns with the research study Smith et. al.

(2005) conducted in which they found that students who had a SMARTboard in their

classroom were taught a variety of computer skills through modeling and practice

with the SMARTboard.

Instructional and Management Strategies Used with the SMARTboard

The last theme I uncovered through this study was that there were a number of strategies that the teachers used to facilitate literacy learning using a SMARTboard. The strategies fell into two categories: instructional strategies and management strategies. I discovered evidence of both strategies through the observations of the first grade classroom and during the teachers' focus group interview.

Instructional Strategies Witnessed Through Observations

Through observations, I was able to see what types of instructional programs Mrs. Reese used with her students. During my first observation, she used Microsoft Word to type the poem and saved a Word Document worksheet into the SMARTboard software, demonstrating her ability to create her own SMARTboard applications. In the second observation, Mrs. Reese used the vortex application, part of the SMARTboard software, to create an interactive sorting game. The Vortex application is part of the software's toolkit, Mrs. Reese just had to add the words she wanted to use to fit her lesson. During the third observation, the students independently navigated through interactive games on a Web site. In the fourth observation, Mrs. Reese had scanned a workbook page and uploaded it to the SMARTboard and created a lunch choice graph using Microsoft Word for the students to complete as part of their morning work.

When looking across the multiple classroom observations, it is evident that Mrs. Reese displayed her ability to plan, create and utilize several different features

and functions of the SMARTboard's capabilities to provide relevant instruction for her first graders. This supports the idea that the SMARTboard is a tool that can be used to provide instruction in many different ways (Smith et. al. 2005).

Instructional Strategies Uncovered Through Interviews

By interviewing the teachers, I was also able to gain knowledge of what types of instructional strategies the teachers use with the SMARTboard to facilitate their students' literacy development. These instructional strategies fell into three categories: teacher created resources, resources created using SMARTboard software applications, and materials used from interactive Web sites.

Teacher Created Resources

Mrs. Every, the second grade teacher, explained how she created her own activities to build students' spelling and phonics skills. She creates phonics activities based on the book *Making Words* by Patricia Cunningham (1994). Mrs. Breen agreed and stated that she also makes her own activities to support sight word recognition. Mrs. Every also acknowledged that she created her own teaching materials by simply typing or scanning texts that she was using during shared readings into a Word document and then showed it on the SMARTboard to create an interactive read-aloud by guiding students through the displayed text and marking strategies or points of interest in the typed text using the SMARTboard markers. Utilizing teacher created resources is efficient in that teachers can save their work for future use. In time,

according to Smith et. al. (2005), this may reduce teacher planning time through the reuse of materials.

SMARTboard Software Applications

In addition, the SMARTboard comes with a variety of software applications in the form of templates. Teachers can open a template and alter the application in order to meet their own teaching needs. Fridge Magnets, an application Mrs. Breen and Mrs. Reese mentioned and readily use, is an example. In this template, a blank "fridge" appears and black and white letters of the alphabet are placed below it. Letters can then be dragged up to the fridge and instantly turn into what looks like multi-colored fridge magnets. This application is useful because, according to Mrs. Breen, "it's something you would normally use as a manipulative," yet it is displayed on a large screen for all to see (06/24/09).

Interactive Web Sites

The teachers mentioned a variety of instructional resources from interactive Web sites during the interview. They are familiar with the Web sites Storyline Online and Bookflix. BookPALS Storyline Online is a Web site developed by the Screen Actors Guild. On this site, students can listen to well-known actors and actresses read picture books. The book's text presented in the story is displayed so students can follow along. The site also displays illustrations from well-known picture books. Bookflix is another interactive reading Web site that pairs fiction and

non-fiction books. Students can listen to each story and then complete a variety of activities to compare fiction and non-fiction stories related to a common theme. Bookflix is developed by Scholastic and requires a paid subscription.

Other Web sites the teachers mentioned correspond with spelling and phonics activities. One example is netRover, a site Mrs. Breen, the kindergarten teacher uses. NetRover, developed by a primary level Canadian teacher, contains a variety of free and for purchase activities. Mrs. Breen uses this site specifically for Dolch Sight Word activities. She believes that the free activities are beneficial because they offer the same spelling games at multiple levels, thus providing the opportunity for teachers to differentiate their instruction.

Having the Internet right at your fingertips while teaching allows teachers and students to have access to the most current and up-to-date information. In her second grade classroom, Mrs. Every uses weather Web sites, and reads the news as part of her students' morning routine. Accessing this information in a classroom is a great way to incorporate authentic, current and relevant learning experiences.

Management Strategies Witnessed Through Observations

Through my observations of Mrs. Reese's classroom, I was able to see the students actively participating, and became aware of the fact that they had learned how to use the SMARTboard over the course of the school year by taking turns, working one at a time, and even, standing back far enough so that their shadows would not get in the way of their navigation on the SMARTboard. During the third

observation (6/4/09), I witnessed a group of four students working without the teacher to complete activities. In addition, in the fourth observation (6/16/09), it was easy to see how the SMARTboard had become a part of the students' morning routine, which could not have happened without Mrs. Reese's precise and ongoing modeling and through the students' own independent and ongoing practice.

Management Strategies Uncovered Through Interviews

Through the teacher focus group interview, I was able to understand why management strategies are important when considering incorporating a SMARTboard in a classroom. All four of the teachers stated that the number one drawback of the SMARTboard is the fact that only one student can write on the board at a time. Since the SMARTboard is a touch screen device, only one touch can hit the screen at time. Even though the board is large enough and there are multiple pens, only one pen will write on the board at a time. Mrs. Breen, the kindergarten teacher, explained this shortcoming by stating,

> It would be really nice if more than one child could be working on it at
>
> one time because on some of the sites it would be nice if they could
>
> work together, but they can't so that is a disadvantage (06/24/09).

Thus, it takes careful planning and management along with multiple experiences for students to have equal opportunities in use of the SMARTboard. Several teachers suggested strategies to overcome this limitation: allow only four in a group and rotating groups when working on the board independently (Mrs. Reese),

forewarn students that not everyone will get a chance (Mrs. Every), and start off the day with an activity where all students get a chance on the board (Mrs. Breen).

All four teachers expressed the importance of modeling appropriate use of the SMARTboard for students. Through modeling and direct instruction, students are able to become experts on how to use and take care of the SMARTboard. This ultimately teaches students responsibility. Careful management can help students build community in a classroom, and as Mrs. Celini stated, students understand that they are part of "a learning community and this is our resource...we have to share this resource and take care of it" (06/24/09).

The four teachers discussed a variety of management and instructional strategies with the SMARTboard. Effective instructional and management strategies provide students' with the abilities to efficiently and properly use a SMARTboard. Balancing management and instructional strategies is necessary to ensure that the SMARTboard is used as an effective tool for supporting both teachers and students. .

Recommendations for Integrating an Interactive Whiteboard

After reviewing the literature related to SMARTboards and completing observations and interviews, a variety of recommendations can be made regarding the use of SMARTboards in early literacy environments. In this section, recommendations for practitioners will be highlighted.

Incorporating SMARTboards in Early Literacy Environments

An interactive whiteboard is a powerful tool that can be used to develop young readers and writers. According to Smith et. al., the SMARTboard is a device that teachers can use to encourage social learning, reach diverse learners, engage students, and enhance computer skills (2005). In this study, I found that teachers with access to SMARTboards were able to engage students, and enhance computer skills. In addition, the teachers were able to gain access to a variety of teaching materials via the Web or through software applications. The teachers were also able to create their own materials and make their lessons interactive on the SMARTboard. Together, these various strategies and techniques enable the emerging readers and writers gain confidence, skills and abilities with aspects of literacy and technology.

Providing SMARTboard Professional Development Opportunities

In order to teach effectively using a SMARTboard, teachers need professional development opportunities to develop and enhance their skills. O'Hanlon (2007) found that professional development was critical to a teacher's ability to utilize the SMARTboard effectively. In addition, Morrow, Barnhart, and Rooyakkers (2002), found that the earlier technology training occurs, the more beneficial it is for future teachers. Morrow, Barnhart, and Rooyakkers (2002) suggest that SMARTboard and other technology training occur at the undergraduate and graduate level for teachers in training.

Teachers using SMARTboards in learning environments also need time to observe others. Just as students are able to learn through modeling, teachers new to the SMARTboard are also able to learn from others. In fact, in the interview, several teachers commented on how having time to observe others was, or would be, beneficial. Others mentioned how having time to meet, discuss and research resources with other professionals was helpful and saved them time in the long-run.

Providing Time and Flexibility to Develop SMARTboard Skills

Lastly, in order to become an effective SMARTboard user, it is important to for teachers to find time to explore how the SMARTboard works, how to create and upload their own materials, and how to import and utilize ready-made materials. Teachers should be open to trying it out and exploring the applications to discover what works best for their own teaching style and teaching programs. The teachers interviewed for this study stated that new SMARTboard users should just jump in and try it, as practice is vitally important to becoming successful with using this tool.

Recommendations for Future Research

Expanding the Findings of This Study

Future studies should be conducted to amplify the findings of this study related to enhancing student engagement, supporting computer skill development, and the using effective of instructional and management strategies with the

SMARTboard. Research of this nature could help school districts determine the effectiveness of equipping classrooms with SMARTboards. Future research may support the idea that students receiving instruction in SMARTboard classrooms are able to receive longer periods of uninterrupted instruction due to higher levels of engagement. Courses in computer skills may need to be re-evaluated to meet the needs of students who are exposed to SMARTboards on a daily basis. Also, continued research related to instructional and management strategies specific to the use of SMARTboards and other interactive forms of technology will be essential in preparing future teachers.

Determining Academic Gains

Further research regarding the academic gains of students' receiving instruction in classrooms with an interactive whiteboard versus students in classrooms without the technology will be necessary to understand how SMARTboards can impact literacy development in the United States. School districts in the United States tend to rely heavily on data. Large-scale technological investments will most likely not be considered, unless researchers are able to display the academic effectiveness of incorporating a SMARTboard into instruction and learning.

SMARTboards and Students With Special Needs

There are a variety of tools and resources available for teachers working with students who have special needs. The SMARTboard may in fact be a tool that can be

used to meet various students' needs in an unrestrictive way. As school districts begin to invest in SMARTboards, decisions will need to be made regarding which classrooms should be equipped. Thus, research is needed to determine how the SMARTboard can be used to teach students receiving special education services. Students with needs such as Attention Deficit Disorder, auditory impairments, and Autism may benefit from the teachers' ability to deliver hands-on and visually stimulating instruction using the SMARTboard.

Conclusion

As a researcher and a first grade teacher, conducting this study has helped me realize that a SMARTboard in an early literacy environment can be a powerful tool to stimulate learning. When used properly, this tool has the ability to support teaching and learning in numerous ways. I look forward to the day when the scenario presented at the beginning of the thesis is my teaching and learning environment. From this research study I am ready to, as Mrs. Celini suggested to "just jump on in and start somewhere" (06/24/09).

I have learned above all, however, that any teaching tool is only as effective as the teacher using it (Solvie, 2007). As a teacher, I must first focus on *what* essential skills my students' need to learn before I can determine *how* my teaching of these skills can be amplified through the use of this tool. Perhaps the most important thing to learn from this study comes from the words of Luis, a first grader, who said, "It doesn't actually teach you to (read and) write, but you can (read and) write words on

it and (your teacher) can teach you and correct you. She (or he) makes you a better

writer; the SMARTboard just makes it more fun!" (06/22/09).

Date: _____

Teacher Observations	Student Observations
Interpretations	

Participants:

_____

_____

_____

_____

_____

Interview Questions:

1. *What do you like about having the interactive whiteboard (Smartboard) in your classroom?*

2. *How have you used the interactive whiteboard (Smartboard) in your classroom?*

3. *What are some of your favorite things to do on the interactive whiteboard (Smartboard)?*

4. *How do you think using the interactive whiteboard (Smartboard) has helped you become a better reader?*

5. *How do you think using the interactive whiteboard (Smartboard) has helped you become a better writer*

Participants:

_____

_____

_____

_____

Interview Questions:

1. *What made you choose to have an interactive whiteboard installed in your classroom?*

2. *What types of professional development have you participated in related to using the interactive whiteboard?*

3. *How has using the whiteboard impacted your literacy instruction?*

4. *What strategies have you found most effective/not effective when using the interactive whiteboard?*

5. *What resources and/or tools do you find most valuable in learning to use an interactive whiteboard?*

6. *What advice would you offer to teachers who are considering using an interactive whiteboard for literacy instruction?*

7. *Do you feel your students are farther along this year in reading and writing because of having access to this tool?*

April, 15th 2009

Dear Parent or Guardian:

I am currently a graduate student at The College at Brockport, SUNY completing a master's thesis for the Department of Education and Human Development. As part of the requirements for the thesis, I am conducting a research study to explore the ways in which an interactive whiteboard influences literacy instruction in K-2 classrooms. Specifically, I am interested in learning more about how students respond to this type of instruction.

As part of my study, I would like to observe your child's verbal and nonverbal behaviors during literacy instruction. If you grant consent for your child to participate in this study, I will observe your child during six 20 minute lessons with the interactive whiteboard.

I will collect data through the use of note taking. No recorded information will be assessed or graded by the classroom teacher.

The enclosed Guardian Consent form includes information about your child's rights as a project participant, including how I will protect his/her privacy. Please read the form carefully. If you are willing to allow your child's participation, please indicate your consent by signing the attached statement.

Thank you in advance for your consideration.

Sincerely,

Jessica Flood
First Grade Teacher and Graduate Student
The College at Brockport, SUNY
Jfloo1@brockport.edu
(585) 729-9694

Dr. Don Halquist
Thesis Advisor
The College at Brockport, SUNY
dhalquis@brockport.edu
(585) 395-5550

CONSENT FOR OBSERVATION OF STUDENT

Dear Parent or Guardian:

I am currently a graduate student at The College at Brockport, SUNY completing a master's thesis for the Department of Education and Human Development. As part of the requirements for the thesis, I am conducting a research study to explore the ways in which an interactive whiteboard influences literacy instruction in K-2 classrooms. Specifically, I am interested in learning more about how students respond to this type of instruction.

If you agree to have your child participate in this research study, your child will be observed during periods of literacy instruction using the interactive whiteboard.

In order for your child to participate in this study, your informed consent is required. You are being asked to make a decision whether or not to allow your child to participate in the project. If you would like for your child to participate in the project, and agree with the statements below, please sign your name in the space provided at the end. You may change your mind at any time and your child may leave the study without penalty, even after the study has begun.

I understand that:

a. My child's participation is voluntary and s/he has the right to refuse to answer any questions.
b. My child's confidentiality is guaranteed. Her/his name will not be recorded in observational notes. There will be no way to connect my child to the observation. If any publication results from this research, s/he would not be identified by name. Results will be given through the use of pseudonyms, so neither the participants nor the school can be identified.
c. There will be no anticipated personal risks or benefits because of participation in this project.
d. My child's participation involves participating in regularly scheduled lessons in her/his first grade classroom.
e. The researcher will be observing my child's interaction with the Smartboard for approximately 20 minutes a week for six weeks. The researcher will sit at a desk close to where children are learning and record observations on an observation sheet.
f. The results will be used for the completion of a thesis paper by the primary researcher.
g. Data from the observations will be kept in a locked filing cabinet by the investigator. Data and consent forms will be destroyed by shredding when the research has been completed.

I understand the information provided in this form and agree to allow my child to participate as a participant in this study. I am 18 years of age or older. I have read and understand the above statements. All my questions about my child's participation in this study have been answered to my satisfaction.

If you have any questions, you may contact:

Primary Researcher: Thesis Advisor:
Jessica Flood   Dr. Don Halquist
First Grade Teacher and Graduate Student,   The College at Brockport, SUNY
The College at Brockport, SUNY   dhalquis@brockport.edu
Jfloo1@brockport.edu   (585) 395-5550
(585) 729-9694

Signature of Parent_____   Date: _____
Child's Name_____

CONSENT FOR INTERVIEW OF STUDENT

Dear Parent or Guardian:

I am currently a graduate student at The College at Brockport, SUNY completing a master's thesis for the Department of Education and Human Development. As part of the requirements for the thesis, I am conducting a research study to explore the ways in which an interactive whiteboard influences literacy instruction in K-2 classrooms. Specifically, I am interested in learning more about how students respond to this type of instruction.

If you agree to have your child participate in this research study, your child will be interviewed after periods of literacy instruction using the interactive whiteboard. Your child may be asked about his or her perspectives and attitudes regarding interactive whiteboards and K-2 literacy instruction.

In order for your child to participate in this study, your informed consent is required. You are being asked to make a decision whether or not to allow your child to participate in the project. If you would like for your child to participate in the project, and agree with the statements below, please sign your name in the space provided at the end. You may change your mind at any time and your child may leave the study without penalty, even after the study has begun.

I understand that:

a. My child's participation is voluntary and s/he has the right to refuse to answer any questions.
b. My child's confidentiality is guaranteed. Her/his name will not be recorded in any interview notes. There will be no way to connect my child to the interview. If any publication results from this research, s/he would not be identified by name. Results will be given through the use of pseudonyms, so neither the participants nor the school can be identified.
c. My child's participation involves participating in a fifteen minute interview in her/his first grade classroom during non-instructional time.
d. Student participation involves answering five questions in regards to interactive whiteboards and K-2 literacy instruction.
e. The focus group interview will be audio-recorded. The audiotape will be transcribed and be used for data analysis only. Only the primary researcher and her thesis advisor will be able to listen to the tapes. The results will be used for the completion of a master's thesis by the primary researcher. Audiotapes will be erased and destroyed upon completion of the study.
f. All data including audiotape will be kept in a locked filing cabinet by the researcher. Data and consent forms will be destroyed by shredding when the research has been accepted and approved.

I understand the information provided in this form and agree to allow my child to participate as a participant in this study. I am 18 years of age or older. I have read and understand the above statements. All my questions about my child's participation in this study have been answered to my satisfaction.

If you have any questions, you may contact:

Primary Researcher: Thesis Advisor:
Jessica Flood   Dr. Don Halquist
First Grade Teacher and Graduate Student,   The College at Brockport, SUNY
The College at Brockport, SUNY   dhalquis@brockport.edu
Jfloo1@brockport.edu   (585) 395-5550
(585) 729-9694

I agree to allow my child to participate and understand that my child will be audio taped.

Signature of Parent_____   Date: _____

Child's Name_____

Statement of Assent
To Be Read to First Grade Students for Observations

My name is Miss Flood. I am a student at The College at Brockport, SUNY. I would like to come to your classroom to learn more about how you and your teacher use the interactive whiteboard (SmartBoards) during literacy lessons. You may see me writing in my notebook or watching you when you are participating in the literacy lessons with the whiteboard.

If you decide to let me find out about the way you use an interactive whiteboard (SmartBoard), I won't write down your name or let anyone else know who you are. When I write about my study, I will only say what you and your classmates did during the lessons.

Your parent or guardian has given permission for you to take part in this study, but it's up to you to decide if you would like to. If you would like to take part in my study, but change your mind later on, you can tell your teacher or me that you have changed your mind. It is okay to change your mind at any time.

If it is okay with you for me to find out about how you use the interactive whiteboard, you can write your name on the first line below. Under your name you can write today's date which is _____.

Thank you very much,

Miss Flood

Name: _____

Date: _____

Statement of Assent
To Be Read to First Grade Students for Focus Group Interview

My name is Miss Flood. I am a student at The College at Brockport, SUNY. I would like to talk to you to learn more about how you and your teacher use the interactive whiteboard (SmartBoard) during literacy lessons. I have some questions about the interactive whiteboard and I was wondering if you could answer them for me.

If you decide to let me ask you questions about the way you use an interactive whiteboard (SmartBoard), I won't write down your name or let anyone else know who you are.

Your parent or guardian has given permission for you to take part in this study, but it's up to you to decide if you would like to. If you would like to take part in my study, but change your mind later on, you can tell your teacher or me that you have changed your mind. It is okay to change your mind at any time.

If it is okay with you for me to find out about how you use the interactive whiteboard, you can write your name on the first line below. Under your name you can write today's date which is _____.

Thank you very much,

Miss Flood

Name: _____

Date: _____

Dear Colleagues,

As part of the course work for my master's in literacy at The College at Brockport, SUNY, I am conducting a research study to explore the ways in which the use of interactive whiteboards influence literacy instruction in K-2 classrooms. As part of my study, I would like to conduct a focus group interview with members of the Smartboard Collegial Circle. The purpose of the focus group interview is to gain insight into your views, strategies, and perspectives related to the use of interactive whiteboards during literacy instruction. The interview will last approximately 45 minutes and will be schedule at the convenience of the participants.

Prior to participating, I will need you to read and sign a consent form. If you are interested in participating or would like to hear more about my study, please feel free to e-mail me.
Thank you for considering being part of the focus group.

Sincerely,

Jessica Flood   Dr. Don Halquist
Graduate Student, The College at Brockport, SUNY   The College at Brockport,
SUNY
Jflool@brockport.edu   dhalquis@brockport.edu
(585) 729-9694   (585) 395-5550

CONSENT FOR FOCUS GROUP INTERVIEW

Dear Participant,

I am currently a graduate student at The College at Brockport, SUNY completing a master's thesis for the Department of Education and Human Development. As part of the requirements for the thesis, I am conducting a research study to explore the ways in which an interactive whiteboard influences literacy instruction in K-2 classrooms. Specifically, I am interested in conducting a focus group interview with early childhood teachers to learn more about their perspectives on this topic.

If you agree to participate in this research study, you will take part in a focus group interview and be asked about your perspectives and attitudes regarding interactive whiteboards and K-2 literacy instruction.

In order to participate in this study, your informed consent is required. You are being asked to make a decision whether or not to participate in the project. If you want to participate in the project, and agree with the statements below, please sign your name in the space provided at the end. You may change your mind at any time and leave the study without penalty, even after the study has begun.

I understand that:

My participation is voluntary and I have the right to refuse to answer any questions.

1. My name will not be recorded. If any publication results from this research, I would not be identified by name.
2. My participation involves answering 6 questions in regards to interactive whiteboards and K-2 literacy instruction.
3. Time is a minor risk. My participation will be no more than 45 minutes.
4. The focus group interview will be audio-recorded. The audiotape will be transcribed and be used for data analysis only. Only the primary researcher and her thesis advisor will be able to listen to the tapes. The results will be used for the completion of a master's thesis by the primary researcher. Audiotapes will be erased and destroyed upon completion of the study.
5. All data including audiotape will be kept in a locked filing cabinet by the researcher. Data and consent forms will be destroyed by shredding when the research has been accepted and approved.

I am 18 years of age or older. I have read and understand the above statements. All my questions about my participation in this study have been answered to my satisfaction. I agree to participate in the study realizing I may withdraw without penalty at any time during the survey process.

If you have any questions, you may contact:

Primary Researcher:	Thesis Advisor:
Jessica Flood	Dr. Don Halquist
Graduate Student,	Thesis Advisor,
The College at Brockport, SUNY	The College at Brockport, SUNY
Jflool@brockport.edu	dhalquis@brockport.edu
(585) 729-9694	(585) 395-5550

I agree to participate and understand that I will be audio taped.

Signature of Participant_____   Date: _____

I would, first, like to thank you for allowing me to come in for observation in your classroom. As you know, the purpose of my research study is to explore the ways in which K-2 literacy instruction is impacted by an interactive whiteboard. As part of this study, I will be observing periods of whole group literacy instruction using an interactive whiteboard. I would like to observe the students in your class as well as the strategies you use with the interactive whiteboard. The names of these students and yourself will not be recorded and pseudonyms will be used throughout my thesis study.

CONSENT FOR OBSERVATION OF FIRST GRADE TEACHER

Dear First Grade Teacher,

I am currently a graduate student at The College at Brockport, SUNY completing a master's thesis for the Department of Education and Human Development. As part of the requirements for the thesis, I am conducting a research study to explore the ways in which an interactive whiteboard influences literacy instruction in K-2 classrooms. Specifically, I am interested in learning more about how students respond to this type of instruction.

If you agree to participate in this research study, I would like to observe your teaching during periods of literacy instruction using the interactive whiteboard.

In order to participate in this study, your informed consent is required. If you would like to participate in the project, and agree with the statements below, please sign your name in the space provided at the end. You may change your mind at any time and may leave the study without penalty, even after the study has begun.

I understand that:

    a. My participation is voluntary and I have the right to refuse to answer any questions.

    b. My confidentiality is guaranteed. My name will not be recorded in observational notes. There will be no way to connect my identification to the observation. If any publication results from this research, I would not be identified by name. Results will be given through the use of pseudonyms, so neither the participants nor the school can be identified.

    c. There will be no anticipated personal risks or benefits because of participation in this project.

    d. My participation involves participating in regularly scheduled teaching lessons in my first grade classroom.

    e. The researcher will be observing my instruction with the Smartboard for approximately 30 minutes a week for six weeks. The researcher will sit at a desk close to where children are learning and record observations on an observational sheet.

    f. The results will be used for the completion of a thesis paper by the primary researcher.

    g. Data from the observations will be kept in a locked filing cabinet by the investigator. Data and consent forms will be destroyed by shredding when the research has been completed.

I understand the information provided in this form and agree to participate as a participant in this study. I am 18 years of age or older. I have read and understand the above statements. All my questions about participation in this study have been answered to my satisfaction.

If you have any questions, you may contact:

Primary Researcher: Thesis Advisor:

Jessica Flood   Dr. Don Halquist

First Grade Teacher and Graduate Student,   The College at Brockport, SUNY

The College at Brockport, SUNY   dhalquis@brockport.edu

Jfloo1@brockport.edu   (585) 395-5550

(585) 729-9694

Signature:_____   Date: _____

SICK

"I cannot go to school today,"
Said little Peggy Ann McKay,
"I have the measles and the mumps,
A gash, a rash, and purple bumps.
My mouth is wet, my throat is dry,
I'm going blind in my right eye.
My tonsils are as big as rocks,
I've counted sixteen chicken pox
And there's one more--that's seventeen,
And don't you think my face looks green?
My leg is cut, my eyes are blue--
It might be instamatic flu.
I cough and sneeze and gasp and choke,
I'm sure that my left leg is broke--
My hip hurts when I move my chin,
My belly button's caving in,
My back is wrenched, my ankle's sprained,
My 'pendix pains each time it rains.
My nose is cold, my toes are numb,
I have a sliver in my thumb.
My neck is stiff, my voice is weak,
I hardly whisper when I speak.
My tongue is filling up my mouth,
I think my hair is falling out.
My elbow's bent, my spine ain't straight,
My temperature is one-o-eight.
My brain is shrunk, I cannot hear,
There is a hole inside my ear.
I have a hangnail, and my heart is--what?
What's that? What's that you say?
You say today is---Saturday?
G'bye, I'm going out to play!"

~Shel Silverstein~

_____'s Couplet...

_____
_____

Title

Write your first line here:

_____
_____

Make a list of words that rhyme with the last word of your sentence:

```



```

Write your second line here:

_____
_____

Now, copy your poem here. Make a picture to illustrate the poem.

_____
_____

_____
_____

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